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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

THE INFLUENCE OF THE ORIGIN OF SEEDS ON THE QUANTITY AND QUALITY OF CROPS.

By Dr. Bronn, Professor of Rural and Sylvan Economy in the University of Liege.

[Translated for the Farmers' Register, from the *Journal d'Agriculture, etc. des Pays Bas.*]

Even to the present day, the cultivators of forest trees have not thought of taking advantage of a phenomenon which is presented to us in the cultivation of agricultural plants, and which, although it has never yet been sufficiently explained, is nevertheless well established. This phenomenon is the influence which seed exerts on the quantity and quality of the crop which is produced from it, according to the different nature of the soil and climate from which this seed has been procured. The good results of this influence have appeared after using seed from a cold climate and a tenacious and cold soil, in a warm climate and a dry and light soil; but they are also equally apparent under circumstances quite the reverse, provided the soil be not too dry and barren, and the seed has had the opportunity of being developed and coming to perfect maturity. It appears then that the two opposite kinds of soils and climates profit equally from a change of seed. Let us consider and examine at first a few observations which may serve to explain this phenomenon, and thence endeavor to deduce the physiological law, and apply it to the cultivation of trees.

The advantages resulting from a change of seed are generally recognized in the cultivation of the cereal plants. In some mountainous countries, in Scotland for example, they bring the seed from the low country and from the plains, where the climate is more mild, and consequently the seed more forward, a quality which it always preserves for several generations. We are convinced that the cultivator of this mountainous district, if he always used seed from his own crops, would reap later and later harvests, so that at last perhaps they would not come to perfect maturity; a circumstance easily explained by the short duration of summers in the mountains. If, on the other hand, the cultivator of a flat country, the climate of which is mild and the soil dry, and light, continually made use of his own seed, it would head every year sooner, the stalks would become shorter, and the heads and grains smaller and smaller, and in time there would result but a poor produce. In this last case the cultivator brings his seed with advantage from a country more cold, the soil of which is good and substantial. Probably these are the circumstances on which rests entirely the difference between the cereal plants of summer and those of winter, a difference too variable to be easily determined.

The flax without doubt, presents us with the most striking example of this phenomenon. We, with great advantage to our crops, bring our seed from Riga, i. e. from a colder climate--the sowing of which causes the grain to be slowly formed, and thus leaves more time for developement of the stalk, which is the principal object of its cultivation. To judge by analogy, we would be led to believe that the result would be the same, were we to obtain from a colder country and a colder soil the grain of the clover and other plants used for forage, in the cultivation of which our object is large stalks and a well developed foliage. Even at the present day we are without experience on this head.

Generally, all plants which are principally cultivated for their grain or fruit, need little or no manure; while manure is necessary for those plants from which we wish to obtain large stalks and leaves.*

Fruit trees which shoot vigorously, generally bear little or no fruit; and every circumstance, which on the other hand prevents the too great growth of wood, favors the formation of fruit. On this observation rests the cultivation of dwarf fruit trees, and espaliers; also that of the vine, &c. &c.

Field plants and plants of the kitchen garden (under equal circumstances in other respects,) blossom sooner in dry, warm and clear summers, and their stalks as well as leaves are smaller, than in rainy and cloudy summers.

From these and many other analogous observations, we can deduce a physiological law of the greatest importance in the cultivation of plants, to wit: Every thing which favors the disproportioned growth of vegetables, opposes or retards their propagation or formation of fruit; and *vice versa*, the formation of fruit is hastened and forwarded at all times when exterior circumstances prevent the full developement and disproportioned growth of the stalk.

Now to apply this law to the rearing of trees, I ought first to remark that many of the phenomena which I have mentioned, are equally apparent in the vegetation of forest trees, although they have not been so much noticed. In fact we see the greater part of our forest trees bear seeds sooner, more often, and in greater quantities, with a south exposure, and in a dry and light soil, than with a north exposure, and on a cold and stiff soil; while under the latter circumstances they acquire greater dimensions.

Many trees, the birch for example, vary with regard to the time of budding and formation of seed, some being forward, and others late. It is well ascertained that those which bud late, have the hardest, heaviest, and in every respect the best timber; and increase more in volume within a certain time, than the more forward kind. It is not yet proved that

* The author's meaning must be taken with reference to the usual rotations of his country, according to which, crops raised for their seeds, are preceded or followed by grass crops, or others, in which the bulk of the whole plant is of far more importance than the quantity or the perfection of the seeds—and according to his theory, crops of the latter kind would receive so much more benefit from manure than the former, that economy requires the farmer's limited stock of manure should be given to the one kind, and not to the other. —[*Ed. Farm. Reg.*

the same phenomena may take place relative to age, i. e. that there may be varieties which blossom and bear seeds, and the growth of which consequently diminishes at different ages. This appears very probable, since we frequently see larches, firs, birches, &c. trees which had their origin in a cold and elevated country, bear seeds in a low, dry and warm country, after having scarcely reached the age of ten or fifteen years, and ten or fifteen feet in height; and the growth of which afterwards becomes sensibly slower:

From this observation we may conclude that the trees of cold climates produced from seeds gathered in dry and level countries will degenerate after many years to dwarf trees, shrubs, bushes, &c. which will scarcely ever be of any value as forest trees. Every attentive cultivator of forest trees will have already noticed similar examples, which will justify this conclusion.

From all that precedes, I deduce for the rearing of timber trees this general law: It is necessary to procure, as far as possible, the seeds from a colder climate, and a colder and stiffer soil than the climate and soil of the country on which you wish to rear these trees.

One of the best things for cultivation in the sandy lands of the provinces of Limburg, of Anvers, and of Northern Brabant, is undoubtedly the sylvan pine, [*pin sylvestre.*] According to the rule just above, the seed gathered in this dry and barren country should not be used, but ought rather be brought from a colder country, or from some place, the soil of which is colder and stiffer. Since some time back, in France and elsewhere, the preference is generally given to the seeds of the pine from Riga, Norway, Scotland, Haguenan, &c. and the rule which it is my wish to establish, has thus been followed by us, but without our having been able to justify this preference by reasonable motives. We have been content to regard the pines of this country as a particular species or variety.

The fir *epicea* (a northern fir,) and larch, are suitable to be reared in the mountainous lands of Ardennes. If we used the seed which grows in the dry and sandy parts of Limburg, Anvers, and Northern Brabant, we would raise nothing but dwarf trees, which at the age of twenty or thirty years, perhaps, would be covered with mosses, and the growth of which would afier that become more slow, and would soon afierwards decay. It is our interest then to bring these seeds from still colder climates and better soils, and from countries in which these two trees grow larger, viz: from the Alps, Switzerland, the Tyrol, the mountains of Hartz, the Black Forest, and Norway.

The rule which I wish to establish will perhaps become very useful in introducing into this country foreign forest trees, for it is very probable that the little success with which we have met in this important part of the cultivation of forest trees is occasioned principally by choosing unsuitable countries from which to bring the seed.

[The foregoing communication well deserves the attention of all thinking farmers. If Professor Bronn's opinion is correct, we may make it operate beneficially on the practice of every farm, either for the correction of common errors, or the introduction of positive improvements, or for both. Very many cases of the proper application of this theory will readily occur, of which I will mention a few only as examples.

We frequently change our seed wheat, either from choice or necessity, and obtain new supplies from other, and perhaps very different soils—and we decide on the comparative productiveness of any two kinds, most generally, by their growth, as they stand in the field. Yet, according to the foregoing theory, the greater length and bulk of straw may be expected from seed that will yield a deficient crop of grain. By attending to the rule offered, we may make profitable selections of seeds from every single field, by taking from the warm and light soil, if we want the best product of grain, or the cold and backward, if the crop is of a kind to be most profitable in proportion to its whole bulk. Another necessary deduction is, that the farmers of Lower Virginia ought often to procure new seeds of clover and other grasses from the mountains, or the northern states, to renew the original bulk and value of those crops, and to prevent their becoming more productive in seed than in hay. And the reverse operation will be equally beneficial as to wheat and other grains, of which the mountain and northern farmers ought frequently to obtain a new stock of seed from the plains and from the south. But even if such considerable changes are not attempted, a less degree of benefit may be obtained by attending to these rules within the limits of almost every farm.

A striking proof of the truth of Professor Bronn's opinion of the influence of climate on seeds is presented in the different times of maturing of the timothy grass of America and the cattail grass of England, These grasses are in appearance, and in every respect precisely the same, except that the English grass is about two weeks later in maturing than the American, when both have been sown together on the same soil. Mr. Strickland made the trial, and states the result in his observations on the agriculture of the United States, reported to the British Board of Agriculture. This difference, which was so fixed, and appeared so remarkable to the observers, is completely explained by Professor Bronn's theory, applied to the temperate and moist summers of England, and the more heated air and dryer soils of the United States.]

ROADS AND RAILWAYS, CONSIDERED IN CONNEXION WITH THE INTERESTS OF THE SOUTHERN STATES.

For the Farmers' Register.

Now, that Baltimore is piercing the Valley at its eastern end, and the inhabitants of the Shenandoah are likely to extend the road from Winchester to Port Republic* and Staunton, it is time for Virginia to arouse, and to abandon, for a time, a scheme, in which her own citizens have no confidence, and to which, there is, at present, the most decided objections, from the tardiness with which it must proceed. For, while Virginia is talking about *how* the James is to be improved, and is really ignorant of the way in which it is to be done, Maryland is preparing to be speedily shaking hands with the inhabitants of the western end of the Valley and of Tennessee, and making Baltimore the

* See Crozet's Reports, in American Farmer.

great outlet for the produce of the Mississippi and the intervening countries. Hence, *for the present*, the James plan should be suspended, and more especially, when we see the probable flow of money into the western states, and the consequent demand for laborers by the cultivators of cotton.

In the large products of cotton plantations, I think there ought to be found funds, which, properly husbanded and well managed, will furnish sources of supply, either in the establishment of plantations, or the sale of slaves by Virginians, and North Carolinians; whence, an eventual recompense may be received for the labor of the slave.

I perceive that, by recent accounts from London, the state of Alabama has effected a loan of $3,500,000, and Mississippi one on New-York of $1,500,000.

The object in view, is the establishment of a bank, which is to deal in ordinary exchange, and discount notes at the rate of 6 per cent. per annum: Notes that have from 6 to 9 months to run, 7 per cent. per annum: Notes that have from 9 to 12 months to run, 8 per cent. per annum. The security of the bank is admirable, as it takes a priority in the courts; and it will either have the effect of destroying all other credit, (a good thing, for it will establish a cash system,) or ruining all other creditors. "The debts," says the act to establish the bank, "due said bank, may be recovered in the Mobile circuit court, after thirty days' notice." I believe, on the simple motion of the proper officer, after a verdict returned, *pro forma*, by a jury. But, why should not all undisputed debts be placed upon the same ground? Is a *preference* constitutional?

Now, when we recollect that the capital of this bank was not *even partially* raised by individuals, but "*wholly* by the sale of state stock," (the stock sold in London,) we need not be very astute to discover the spirit of enterprise and speculation to which this loan will give rise. The debt is not redeemable till 1863; so that this $3,500,000, (to say nothing about the $1,500,000 of Mississippi,) fully trebled in amount by banking operations, will set more than $10,500,000 at work, and the greater portion of this money will be invested first in land and next in negroes. Calculating on the London loan and its premium, it will produce, if but gradually thrown on the market, $3,745,000. Again; forming our estimates on the bold character of all new banks and bankers, that have thus received thirty years' credit for their capital, we may say, that, in a very short space of time, thrice this amount, or $11,235,000, will be afloat. Nor, *if all the parties are prudent*, will this loan be injurious, in its effects, to the state of Alabama. The new and fertile land of that country will enable judicious, humane and enterprising men to borrow of this bank, and not only punctually pay the interest, *when due*, but provide a fund for the final destruction of slavery--a doctrine now becoming prevalent in every slave state; for, the people, in the healthy portions of each of them, begin to discover that, in the increased and improved population and cultivation of these districts, there will be found a more than ample compensation to any public loss that may be sustained by the abolition of slavery, and the consequent supposed abandonment of the unhealthy portions of these states. I say *supposed*, as I am convinced much more might be done by industrious white laborers, in these unhealthy sections of country, than is now supposed possible: and when the seats in the state legislatures become occupied by men of intelligence and patriotism, science and art take the place of a love of useless legislation and baleful litigation, and the draining of the low countries is found to be a matter not only of prudence, but of policy and of profit, I have no doubt many obstacles of this kind will disappear.

This measure, especially in Virginia, with the introduction of white, to replace black labor, in the cultivation of wheat, tobacco, &c., will soon make personal exertion, in the classes of mechanical labor, creditable and praiseworthy—a circumstance now forbidden by the existence and effect of slavery.

If I am a subject of ridicule for the expression of this opinion, I will ask, whether the introduction of Africans did not mainly tend to expel a population of 60,000 whites from Barbadoes; and, whether the first colonists of Georgia, *a colony especially planted with a view to free cultivation*, did not labor in the field? [See Wesley—*official edition.*] the fact is, that the climate of Virginia, the Carolinas and Georgia, is, in no section, worse than that of the Crimea, and the Maiaria districts of Italy.

I will also ask, if a revolution in opinion is not daily taking place in the slave states themselves?

To demonstrate it, I would refer to Mr. Berrien's recent speech. It proves what he fears will be the situation of affairs in Georgia, if the people confirm the acts of the convention. He attributes those acts to party feelings; but, every one who is acquainted with the upper sections of the southern states, knows that he does this erroneously. Let the paragraph, in his speeh, beginning with "at such a moment," and that subsequent to it, be carefully read, his party feelings be recollected, and the real state of the case will be self-evident.

Let us also recur to Col. Lumpkin's speech at Boston. "Several *circumstances* were now *concurring* to hasten that result." [The dissolution of the times between master and the slave.] "He truly believed, that the interests of the owner and the slave were alike *identified in emancipation;* and the time was *rapidly approaching* when THE PRINCIPAL WOULD BE ABANDONED; and, the only difference of opinion would be, how can the thing be done, and what will be the best manner?"

We are assured the doings of the convention of Georgia will be ratified by the people, in the acts of their general assembly. If this should turn out to be the case, no further proof of the correctness of Col. Lumpkin's opinion will be necessary.

However, I am wandering from my subject, which was the London loan to Alabama, and its effects on that and the neighboring states.

For whose immediate benefit will this immense sum of money be, *in fact*, expended? For that of Virginia more especially, *in the purchase of negroes*. But such is the humanity of many of her slave-holders, that they will rather patiently await the operations of the colonization system, or the result of circumstances, than part with their slaves. To these gentleman, I would say, "remove your negroes to Alabama, &c. and there let them work themselves, and yourselves, if you are embarrassed, with a condition in all respects free. Your debts may be paid, a sufficient fund furnished for the transportation of your people, and an ample source of wealth created for your families; and a more

than ample source of public spirit and public prosperity, in an expulsion of the baneful effects of slavery from your fire-sides." Should such language be heard, and such terms be granted, there is little difficulty in saying, that the wealth, importance and influence of Virginia, will in ten years, be trebled—its downward progress will be arrested.

But an objection will be started, as to the possibility of a Virginia planter having an establishment in the two states. This objection, too, can be removed, if a Virginia legislature and a Virginia population can be made to unite, in creating a cheap, and for the time efficient, kind of railway; a railway, that at the expense of $3000 per mile, shall penetrate the very centre and reach the most distant point of the great and the far west; there it shall not only produce a lucrative but beneficial employment for the negroes; and, if the principle of life-insurance could be so well understood as to be generally applied and adopted, together with a proper system of providence and prudence, a provision would eventually be made for their cheap and easy transportation and emancipation. In return, it would bring back the results of their labors, at a low and profitable rate, to the banks of the Chesapeake, and thus give rise to a commerce, the consequence of the sale of that produce, which, *of itself*, will, although in an indirect manner, more than pay every expense incurred.

Let us now inquire into the possibility of discovering a chief efficient and economical rail-road system. The subject has been, for many years with me one of constant and interesting consideration. As early as January 7, 1819, my opinion on this subject was thus *publicly* expressed.—"One of two kinds of roads may be made—the common turnpike, or the *artificial rail-road*. The latter, on which *a horse* will draw three or four tons with great ease, and at the rate of three or four miles an hour, might be laid down, *in the first instance*, with wood; and when the material shall become as dear as iron, recourse could be had to metal. *Then*, it will have the decided advantage in resting on a *well trodden basis*. This will remove all danger of its yielding to any pressure, however heavy it might be."

"A very few dollars would show the result of an experiment, that, if *the people of Charleston think proper*, may be made. Suffice it, therefore, to say, that 180 miles of road would complete the communication between Charleston and Columbia and Camden. Sixty more would carry it to the North Carolina line--in all 240. Calculating on its consuming 16,000 feet of timber, it would cost $1500 each mile, or $360,000, and answer every (present) purpose."

But the people of Charleston would not stoop to a cheap experiment; but, *more majorum*, have had recourse to an expensive scheme; and one that must fail in every object, except to prove the value of rail-roads. At the same time, their expenditure will show the folly, in a country like this, of having recourse to plans which are costly, only temporarily efficient, liable to rot, and so obnoxious to fire; for such is the character of the rail-road plan as it has been adopted in South Carolina.*

What said the Georgia rail-road meeting, on the 26th June, 1833, at Athens? "From the *best information* which the committee could procure, most works of a like character with that *proposed by this meeting*, have been effected at about the same expense. It is not an unsafe estimate to say, that rail roads can be constructed, on most surfaces, at between 4 and 5000 dollars per mile. *Some have cost less.* [These are Mr. Black's '*splendid theories*,' I suppose.] It is true, that the Charleston rail road, by a recent report of its directors, has cost more, *but this case furnishes* no certain *data*, from which *an accurate conclusion can be drawn.* In the first place, it was an entire new plan." [*Query*—the Carbondale road—J. Bolton, president--See Congressional Report.] "It was, in the beginning, as was reasonably to have been expected, from the want of experience, *as well as a departure from the known practical science on the subject*, not economically managed. Besides, they have expended large sums of money on real and slave property, and upon greater quantities of machinery than was at the [any] time required—all of which ought to be avoided, and no doubt will, in the one to be projected by this meeting."

Slave labor was not, as it ought to, and might have been, *exclusively employed.* The loss, direct and indirect, was great—direct, in its increased expense and great waste of time—indirect, in the transmission of so much capital from the state. *Of this, let Virginia and North Carolina be well aware.*

The charge for the construction, &c. of the Charleston road, is $579.838 58—for iron, $105,-161 83: together. $685,000 41--the iron is about $705 per mile--the *et ceteras* about $4,295: together, $5,000.

The estimates varied. Mr. Mills calculated $405 000 for 140 miles, Dr. Howard, $637,000 for 150 miles; (expressly urging the company to remember that distance was, comparatively, of no importance;) and even so late as February, 1832, the chief engineer, (Horatio Allen, esq.) *when more than one third of the contract labor had been completed*, stated $600,000. This sum was (by him, it is to be presumed,) thought sufficient to cover the *entire* construction.

It has already cost a million, and probably one million one hundred thousand will be the *minimum* charge of its construction and completion.

The surveys have cost $35,959 85--the superintendants, $16,648: together, $52,607!!!!!

The engineer received for a service of each eight months, $3,600—a little difference from the salaries paid in Virginia to engineers, and quite as liberal as the legislature is to lawyers.

The cost of the locomotives and their *et ceteras*, is to be $136,000—their wear and tear, $75,600. *Et ceteras*, $90,000: in all, $164,000—and in all *probability*, judging from the experience we have had of the expenditure of these expenders, the *minimum* annual expense will be $250,000.

However, if the Athenian estimate of the produce and consumption of N. E. Georgia be correct, and, according to the prediction of the *wiseacres* in South Carolina, Savannah *is to be abandoned*, the Charleston rail road may yet do well—if, at least, the charge on the freight of cotton be reduced; and this it must be; for if the Georgians charge 81 cents per bale, and the Carolinians 151, in all 232, the scheme cannot be popular—both must recede from their prices and their pretensions.

But state pride will forbid success to any attempt

* See a description of the Charleston and Hamburg rail-road, at the end of this communication.

that has for its object to deprive Savannah of its importance. When it is clearly seen that the 210 miles to Athens, from Savannah, can be completed for 3000 dollars per mile, or, at all events, for one million of dollars, it is by no means probable that, with such an admirable scheme as that proposed at Athens, *young* Georgia will patiently suffer herself to be deprived of an export now exceeding that of *old* Carolina, in the proportion of 240,000 to 180,000 dollars.

To this state pride, I should have no objection, if it did not tend so much to the aggrandizement of N. York. This, it most decidedly does; and Charleston, Savannah and Wilmington, ports now but *partially commercial*, as well as Beaufort, S. Carolina, and Norfolk, ports of perfect capacity for all military and commercial purposes, thus become victims to the great Babylon of the United States.

My opinion ever has been, and still is, that a good road is the only true basis, and correct commencement, of a perfect rail road—an opinion that was expressed in the Enquirer, at the time when the people of Petersburg were obtaining their rail road act from the legislature of Virginia.

The simpler the road the better, if it possess but solidity; and nothing will confer such solidity as time and travel. Hence, I think Mr. Hartman's idea of the turnpike commissioners laying down a cheap rail road, an excellent one. I differ with him as to the mode. From what I understand to be his plan, I apprehend his object is a channelled track. It will never do, as it will constantly fill up. The plan of an ordinary sill, with a lath of harder wood, on which a cast iron wheel, accommodated to the shape of the lath, would travel, would be preferable, and would resemble the edge rail road.

Let us suppose the principle to be adopted, and two or four sills to be lain down from Staunton to Waynesborough, and the space between them to be filled up with the best material, and surmounted with the lath of harder wood, be thus rendered fit for the travel of the carriage, with the iron wheel cast for the purpose. All the carriages and horses, proceeding to or from Staunton, could then be carried on this road; (they are thus conveyed on the Charleston road;) and as little New-York and Charlottesville are in the direct line of travel to Richmond, a successful result would make it a link in the great chain of road from the west to the Atlantic. The road from Charlottesville to Richmond does not, I think, offer any serious impediment; and should this experiment succeed, it would, at one and the same time, produce a common turnpike and a rail road. The distance between Charlottesville and Richmond, would not cost, *at first*, more than 85,000 dollars—*eventually*, 255,000 or 300,000 dollars.

As to graduation, it should be performed as much, and as well, as is consistent with economy. But, to the *primary* and *temporary* road, we should look for the cheap and easy means of fully and completely graduating and perfecting the *final* site of the railway.

Should this plan succeed, roads would soon be run into the far west, and the planter would sustain himself and educate his family, with a few negroes *in the east*, while the larger number, and more efficient of his servants, would be providing for their future colonization or emancipation, and the discharge of the claim their masters held on them, *in the west*.

In conclusion, and with a practical view of the subject, I have great pleasure in stating, that the newspapers inform us that a cheap 22 mile rail-road, from Edgefield to the Charleston road, is in agitation, and that a horse rail-road is about to be laid down in the streets of Columbia S. Carolina.

SMEATON.

GENERAL DESCRIPTION OF THE CHARLESTON AND HAMBURG RAIL-ROAD.

As many of our readers may be unacquainted with the extent and peculiar construction of the rail-road from Charleston to Hamburg, (opposite Augusta,) and, therefore, will not understand the preceding remarks thereon, we subjoin a general description of that important public work, extracted from a late publication by A. A. DEXTER, civil engineer. The pile method of construction, however unfit for a dry and firm soil, seems admirably suited for the passage of swampy and flooded lands, where timber is plenty; and no where can it be more advantageously adopted than on parts of the route of the Portsmouth and Roanoke rail-road.

[*Ed. Farm. Reg.*

We will preface our description with the remark, that in the establishment of a rail-road through a well timbered country like that through which this road passes, there can be no doubt of the judicious economy of the general plan of pile construction, which has been adopted in preference to the expensive system of embankments which prevails at the north. Besides the increase in the first cost, the expense of keeping the embankments in repair, owing to the injuries sustained from settlings, washes, slides, derangement of culverts, &c. is unquestionably greater than that attending the occasional renewal of decayed timbers.

The profile of the South Carolina rail-road, embracing, generally, a remarkably uniform surface of country, may be compared to that of a continued bridge, sometimes resting on the earth, but generally elevated above the soil about five or six feet.

The road extending from the city of Charleston to Hamburg, is 135 miles in length; and the rails were laid in continued line complete, about the last of June, 26 months from the period when the whole line was located and put under contract. A few miles of the rail-road, near Charleston, were made, and in use with cars, about two years prior to this period.

The road crosses the Edisto river, about 400 yards below the junction of the north and south fork, 65 miles from Charleston, after passing over, in that distance, six difficult streams, and depressions, the Saw Mill Creek, Cypress Swamp, Four Hole River, Indian Fields, Pope Swamp and Cattle Creek. The road continues its course on the dividing ridge between the Edisto and the branches of the Savannah, passing nine miles to the north of Barnwell village, until it reaches the head of the valley of Wise's Creek, a branch of Big Horse Creek.

At this point, which is only 21 miles south of Edgefield court-house, the road attains its highest altitude of 510 feet above the level at Charleston, and 360 feet above the Augusta bridge, 16 miles distant. One hundred and eighty feet of this descent to the valley of the Savannah, is conquered at this point by an inclined plane, 3,800 feet long,

having three grades of ascent, the steepest of which is 1 in 13.

From the foot of the plane, the remainder of the descent is overcome in 10 miles, having an average inclination of 18 feet in a mile.

At Hamburg, two spacious depositories are in course of construction, of brick, with zinc roofs, on a commodious lot of six acres, gratuitously bestowed on the company by Henry Shultz, esq.

There is only one bridge of importance on the whole route, that crossing the Edisto river, which is 400 feet long, has a single arch over the main stream of 66 feet.

The road is a single track, except at the inclined plane, where there is one mile of double road, and at the turn outs and depositories, about three miles more.

Two stationary steam engines, which work on the same crank, of about 25 horse power each, now erected at the head of the inclined plane, and nearly in readiness for operation, will effect a passage of the loaded trains and passenger cars over the plane at the rate of about ten miles an hour.

The 7th residency, embracing the distance of 15 miles from the foot of the inclined plane to Hamburg, was much the most difficult and expensive part of the road—a more costly plan of construction being frequently necessary, owing to the badness of the foundation and the height of the work. The excavation of this road cost nearly $1000 per mile, while that of the rest of the road will not average $300 per mile. The high price of materials was one great cause of the increased expense of this section.

The profile of the South Carolina rail-road is remarkably favorable, as the entire length of inclination, as great as 1 in 150, or 35 feet a mile, is but 1⅝ miles, the occasional ascents not exceeding 1 in 200, or 26 feet in a mile.

The straight lines, with the exception of the 7th residency, are generally uncommonly long, and the curves easy. There is one straight line 25 miles in length, and several courses of from 6 to 10 miles. The first 65 miles from Charleston varies in length but half a mile from a uniformly straight line.

The road is now ironed a distance of 100 miles from Charleston, to which point the steam engines have frequently passed. All the iron would have been on, and the road in complete operation, but for unexpected delay in the arrival of the locomotive engines, three of which, contracted to be delivered in Charleston by the 1st of March last, have not yet arrived. The engines in use do not afford sufficient power to transport the iron for the road, and at the same-time comply with their mail and passenger arrangements and the public convenience in the constant carriage of freight.

Two of the engines now in use, are built on an entirely novel plan, according to the instructions of H. Allen, esq. chief engineer of this road. They are supported upon eight wheels, by which means the weight is diffused, and a more powerful engine is obtained with the same stress upon the road.

This engine, however, is more complicated in its construction, and more liable to derangement, than a four wheeled engine, and therefore, at present less generally approved—but, it is to be hoped that the few practical difficulties which attend the use of an engine, so well adapted to powerful transportation, in this and other roads, which may be built on a similar plan, may vanish before superior skill and experience.

When in order, these engines, for a few miles, detached from their train, have frequently attained a speed of 40 miles, and in one or two instances, of more than 50 miles per hour. The engines will carry 30 tons of freight, besides passengers, with ease, 15 miles an hour, at a cost of about $20 per day, including all expenses of fuel, attendance, and wear and tear of engine. The Phœnix, a light engine on four wheels, has twice run from Charleston, a distance of 72 miles, to Midway and back, in the day, a distance of 144 miles, placing it, therefore, beyond a doubt, that the travel from Augusta to Charlerton can be effected in 10 and 12 hours.

If the engines which have so long disappointed us, should arrive in the course of this month, the whole road can be in use by the 15th day of September. The 15 miles from Hamburg to the foot of the inclined plane, is ironed, and used with hand cars. The mail is now carried 105 miles on the road.

DETAILS OF CONSTRUCTION.

There are four different plans of construction made use of on this road, the adoption of which was determined by the character of the soil, and the height of the line of grade:—these are, the sleeper plan No. 1, the sleeper plan No. 2—the pile construction, and the truss work.

Sleeper plan No. 1.—The sleeper plan No. 1, which is a very cheap construction, answers well on a good clay or gravel foundation. In this construction, the rails, 6 by 10, are supported on transverse sills, 10 by 12, laid 6½ feet apart: these sills are 10 feet long, of good lightwood or heart pine, well hewed. In trimming up the excavations and bermes, and preparing the side drains, enough earth is obtained to cover the transverse sills entirely, and afford a solid bearing to the whole length of the rail. Most of our road on this plan has been built by contract for $1450 per mile—the excavation, draining and filling is not included. We have about 5 miles of this road.

Sleeper plan No. 2.—This plan likewise is used in excavation, and forms an admirable structure, preferable to the other in being less liable to settling and lateral derangement. In this case, the size of the rail and distance apart of the supports remain the same. The caps, into which the rails are let a depth of three inches, and secured by wedges, as before, are 6 by 9, and 9 feet long, fastened down at each end by a 2 inch trenail, to a longitudinal sill, which is firmly bedded to nearly its full depth in the ground.

These longitudinal sills are put 3 feet from the centre of the road each way, which bring them nearly on a line, under the rails. The size never was allowed to be less than 9 by 9, generally well hewed in the upper and lower surfaces, and blocked off on the edges. It is better to jog the caps into the sills by a gain in the latter, and use a wedge in preference to the trenail, as the pin hole admits water and engenders decay.

On this plan the inclined plane is built, but the lower sills are 12 by 12—all heart of the best pitch pine, well hewed on all sides, and the ends lapped.

The average cost of work on this construction, is about the same with that of piling on the same grade—from $1800 to $2200 per mile. There

are about 18 miles built on this plan in the whole road.

One considerable advantage attending this plan of construction, is the facility of repairing it, and renewing the decayed supports. Another important consideration is, that timber will last longer horizontally placed than vertically—as in the pile construction.

Pile construction.—In this construction the posts are generally of lightwood or of the heart of the pine tree, round—with the but-end in the earth, and from 10 to 15 inches in diameter. The posts are in no case allowed to be less than 4 feet in the ground—6 feet apart transversely, by 6½ feet longitudinally. Where the ground is soft the piles are sometimes driven to a depth of 25 feet—the distance in earth being entirely governed by the descent, under a given weight, at the last blow of the hammer.

The weight of the hammer used, varied from 600 to 1000 pounds. The best piling machines were 15 feet in height on large wooden rollers, with moveable ears of disconnecting the ram block, at different heights, secured by bolts and nuts to the uprights. Under a hammer of 900 pounds, with a clear fall of 20 feet at the last blow, the pile was allowed to sink two inches. As the success of the road in a great measure depended on the stability of the piles, competent testers, under the pay of the company, compelled by their presence the faithful execution of this important part of the work.

Holes were generally dug about 3½ feet deep into the soil, before the pile was introduced, by means of *tongs*—a kind of double spade, made for the purpose. In hard soil this previous digging is a great saving in expense, and by allowing the pile to be introduced with nearly its full size at the end, is a material aid to its permanency.

The piles, being sawed off and tenanted on the true and even line of graduation established by the levels of the engineer, are connected transversely by caps 9 feet long, 6 by 9.

The rails, 6 by 10, and never less than 3 stretches or 19½ feet in length, are let into the caps 3 inches, and secured by wedges, driven on the inside of the rail in each cap. About ¾ of an inch is taken off the inner sides of the rails by a chamfer four inches deep, to a line, on which the edges of the iron plates are laid percisely 5 feet apart across the road, in the clear. Great care is necessary that the top surface of the rail be perfectly smooth and uniform, so as to afford the iron a solid bearing.

The confidence which the projectors and advocates of the pile construction felt in predicting the economy and stability of the plan, is entirely justified by the result. So far, the settling of the road even in parts which have been in use 4 years, is confined to a few points,—and then the introduction of a few additional supports, remedies the evil. Not the slightest yield is observable in any part of the road where the driving was properly attended to.

The cost of our pile construction has been from $1900 to $3000 per mile, averaging about $2300, the bracing being extra. The piling machines, with blocks and gearing, are furnished to the contractors by the company, at an expense of about $100, for each complete.

We have some pile construction 15 feet in height—strengthened by outside braces, supported against short piles driven about 8 feet from the road on each side of the main track.

No bracing is requisite where the height is under 7 feet, if the soil be firm. From 7 to 10 feet, one brace of 4 by 5 scantling between each pair of posts, is sufficient. Above 10 feet, 2 braces between each pair of posts, placed somewhat in the shape of a letter X, are introduced.

One mile of single bracing, average height, costs about $150: of double bracing, $400.

Truss construction.—Where the bottom is bad and the work over 12 feet in height, the truss construction is adviseable.

A foundation must first be made of piles, well driven, supporting a large bottom sill, 12 by 12, which may be embanked on the top, or a foundation of transverse and longitudinal sills, firmly imbedded in a solid sand embankment, may be used. This last plan we have frequently had occasion to adopt in the 7th residency. Four posts, 8 by 10, making something the shape of an inverted W, connected at the top by a cap 10 by 12, are mortised into the bottom sill 12 by 12. The trusses or bents may be put 12 or 13 feet apart, when the size of the rail should be 12 by 12. Ten feet apart with rails 9 by 12, is a convenient distance. The cost of the construction, the solidity and strengh of which has given great satisfaction, is very variable, depending on the difficulty of the foundation, the price of the materials, and the height of the work. It varies from $6,000 to $10,000 per mile. There is one connected piece of road on this plan, almost half a mile in length, the height of which is from 18 to 25 feet. There is altogether about 5 miles of the truss construction.

REFLECTIONS ON THE IMPROVEMENT OF AGRICULTURE.

To the Editor of the Farmers' Register.

No species of literature affords more useful instruction, than that which leads to the knowledge of extracting from the earth, in the easiest and most abundant manner, a supply of the best food for man and beast, and which shall leave it in a situation to make similar returns. Allow me to congratulate you, upon your success in arousing the hitherto dormant feelings of lower Virginia, which promises to enable us to reach the desirable object of resuscitating our worn out lands. We owe you much, nor should the sons of lower Virginia withhold acknowledging it. For years it has been lamented by the intelligent, that we were neglecting the advantages within our reach: but no individual has boldly come forward to remedy the evil; some faint efforts have been made, but none which ever promised as does your publication. Should your efforts fail, we may hang up our agricultural harps upon the willows, with a fear that before another such era shall occur, they will be so far unstrung as to require immense efforts to tune them again up to their present melody. By the friends of your undertaking, every effort should be made to sustain you. You acknowledge, that without aid, you must fail: this is evident; and from that consideration alone, am I prompted to make this communication, which in the absence of more useful, may be used by you: not that I imagine myself able to throw any new light upon the subject, or even to afford matter, gathered from those who have preceded me, that in

itself will be desirable. Nor do I imagine much can be done by any one individual; if any thing is to be accomplished, it must be by the successive efforts of many—and as all cannot be masters, an indifferent workman may be allowed to give a helping hand.

It is not my intention, at this time, to attend to any one of the many subjects which agriculture affords, but merely to throw out some hints which have occurred to me, in reflecting upon the probable result of your publication. So fully aware am I of the character of *us Virginians*, that I cannot but fear, that when the novelty of the matter is over, your support will lessen, unless those who feel an interest in the subject, instead of merely crying out to you, "go on," will in the language of good farmers, say "come on."

No one can doubt the advantages to be derived from an agricultural paper among us; for notwithstanding there are many writers upon the subject, yet it must be discernible to all who have consulted them, that it is necessary for certain sections of our widely extended country, to have some such work as can embody general principles, and at the same time give the result of particular experiments confined within the limits of its legitimate influence. The progress of education throughout our country, furnishes a hope we shall have a more reading people, and if this should be realized, it is desirable it should be well directed: and to what subject, of a secular kind, can the people of Virginia better devote themselves than agriculture? That errors have crept in among agricultural writers, is evident; the useful parts of the science have often been sacrificed to those which only afford subjects for speculative inquiry: often more time has been taken in proving the fallacy of a theory than would have been necessary to establish a true one, had the theories made a proper start, or (as every honest writer should do) when he comes to the end of his tether, there stop. The mind of man, limited as it is, should be satisfied with ascertaining facts and tracing their relations to each other. But the pride of man often urges him to envelope the subject in mystery, by endeavoring to point out cause and effect beyond his ken; and unfortunately, many possess pre-eminently the art of plausible misrepresentation, from which the mere agriculturist, who may have been deceived, turns with disgust, and is ever after averse to book knowledge.

As it is probable that most of the writers for the Farmers' Register will be individuals who have not been in the habit of public exhibition, it is to be hoped they will neither follow the verbose style of the day, nor attach themselves to a theory, and hunt up facts to support it, right or wrong, but will content themselves in forming a theory out of facts cautiously embraced, and honestly stated. Elegance is difficult to attain, and without great taste, dangerous to attempt. What is principally required in agricultural writings is great perspicuity, precision, simplicity and honesty. Flowery language is well calculated to create a suspicion that imagination has more to do with the subject than observation. I cannot conceive a happier state of things, than to create a confidence among the agricultural part of the community, in what is called by them book-knowledge. Could we transfer a part of that confidence which the politician has in the different newspaper statements of his party, happy would it be for us.

The time having arrived when we must provide for our sons in some other way than by throwing them pell mell in what are called the learned professions, it becomes every parent to endeavor to raise agriculture to its proper level, that the present reluctance manifested by young men in Virginia to follow it, may be done away. Were they to consult their interest and comfort, they would not be thus backward; would they look around, they would find but few of those in the learned professions succeeding; and if the funds expended had been applied to setting them up on a farm, adding thereto the time lost in obtaining the profession,) they would no doubt, by the time they arrived at the meridian of life be worth more money, and, from experience in farming, be in the way of doubling their income. But, it is said farming is not a money making business. True, it is not often that a young man, setting up on a farm, can move in the splendor which either a professional man or merchant can on a borrowed capital; but, it is equally true, that he is not so often visited by the sheriffs with writs, &c. We should, therefore, never envy that splendor which is purchased at a price we should not like to submit to. If, then, you refuse the price, why expect the purchase? Why repine at providence for not placing you in a situation your spirit could not bear? By well directed industry, with our faculties directed to one end, we shall generally be successful, and enjoy a peace of mind little known to the occupant of a splendid unpaid for mansion. Let the professional man make an estimate of his annual income, and his necessary expenses, and as a general rule, he will find unless he has a farm to aid him, he clears but little. Let the farmer, on the contrary, who thinks his farm does not yield, at most, 4 per cent., estimate the rent of his house, the keeping of his horses, the food furnished his table, the domestics around him, all necessary to his comfort; and he will find, that from a capital of $5000, judiciously laid out, he can live as comfortable as the professional man enjoying the profits of $1000 from his profession, with the addition of his $5000 at 6 per cent. Were I to attempt an average of the amount obtained by professional gentlemen, (omitting those who get nothing,) I would place it much below that sum. If this be true as a general rule, how much more so must it be when a father shall settle his well educated son upon a farm purchased at a reduced price, upon which is profusely scattered *marl beds*, every year adding inexhaustible wealth, which neither the failure of the banks can rob, or the caprice of man lessen: withal he may calculate upon his son having a better prospect of long life, not being necessarily dragged out at all times, through all weather, with a harassed mind, as is the case with the professional gentlemen, who, of all others, are the greatest slaves.

One of the many errors entertained by the Virginia agriculturist is, that land is cheap and labor high; hence the destructive method hitherto pursued. As a general rule, in Virginia, cheap land is not worth cultivating, unless improved; good land rarely obtainable. To improve indifferent land is not fashionable, and a large surface of poor land must require considerable expense to cultivate; and even to gather together its scanty product, is often a most laborious undertaking, from its scattered state. To remedy this evil is the great object: when that is done, the reverse of the pro-

position will be so true that our present laborers will advance much in price. It is certainly as much to the interest of the farmer to increase his capital, as to the merchant: and the merchant, who, from a condensed capital, can reap a large profit, estimates his business more highly than if compelled to scatter his funds. The farmer who, to make 500 barrels of corn, has to cultivate 200 acres of land, certainly does not clear as much as if he made the same upon half the surface; supposing, in both cases, that he cultivates land for which he pays nothing: and how must the case be altered, when he pays for the extra 100 acres.

Furius Cresinus, a peasant, being accused before the Roman people for a sort of witchcraft committed by him upon his neighbors' lands, which though of greater extent, yet yielded not so good crops as his, that were less—took no other course to justify his innocence than to bring, on the day of his appearance, his intruments of agriculture, kept in exceeding good order, beseeching his judges to believe he had made use of no other spells than those with abundance of pains and watchings. It ever being difficult to pursuade mankind to abandon a particular course at once, we need not expect to arrive at the desirable end of lessening our surface until a new set of agriculturists shall grow up, obtaining information from some other source than the fire-side chit-chat of their antiquated parent. From whence have improvements in agriculture emanated? Not from those who have followed it from their youth, but from those who at an early period left their parental roof in pursuit of literature, or have retired from some of the professions: they enter upon the business with no preconceived notions, extract information from any source, and after due deliberation, they act without those doubts and fears which accompany the sons of an old farmer, raised with him, and who have from infancy been taught to reverence old opinions, and to let alone those newfangled notions which "look mighty pretty upon paper, but never fill the barn." May we not hope, that the time is fast approaching when every county will have an agricultural society—(and what cannot well regulated associations do?) Until that is done, much remains to be done; and the Farmers' Register is, I hope, the entering wedge, by which the prejudices of the community will be rent asunder, and agriculture hold up its crest-fallen front among the sciences of the day. Shame to us that we are so far in the rear. With these remarks I close. In wishing you success, I but express a patriotic wish, which would warm the bosoms of all the sons of Virginia, if they would view the matter as it merits. MEDICUS.

For the Farmers' Register.

OBSERVATIONS ON THE AGRICULTURAL IMPROVEMENT, AND THE PUBLIC WORKS OF VIRGINIA.

To the President of the Fredericksburg Agricultural Society.

In circulating pretty extensively through Eastern Virginia, my observations upon the altered face of the country lead me to the comfortable conclusion, that the spirit of improvement in agriculture is abroad in the land, although the ardor in the cause of societies for its promotion, appears much to have abated of late years. There appears to the observing traveller, considerable evidence of attention to the *practice* of improvement, if lukewarmness as to the theory exists. Fewer gullied and denuded hillsides are presented as eye-sores. The fields are now mostly ploughed horizontally, by which the general surface is prevented from being washed into the bottoms, as formerly, by the old fashioned up and down hill mode; and more attention seems to be paid to the broadcast application of manure, upon the thin and poor parts of the fields, to equalize the fertility, instead of pursuing the old plan, (originating doubtless with the tobacco planter) of concentrating all the manure raised, upon one or two lots, to the neglect and disparagement of the farm.

It seems to be a subject of controversy, however, whether it is not the most judicious course, to manure what you can, highly, and limit your cultivation to a small number of highly improved acres, instead of the broadcast plan of improvement, and cultivation of much land to the hand. It seems to me, from my observations and reflections upon this subject, that the peculiarity of situation in reference to the market, and facility and despatch in visiting it, should decide the course to be pursued. Lands convenient to large cities, of great cost, that can be stocked down in meadow, after one grain crop that would pay for a manuring and liming at once at the cost of $20 to the acre, and which will remain eight or ten years in prime meadow, without being overrun with thistles, dock, or broom sedge, will present a subject for this description of cultivation and manuring. But, at a distance from cities, which afford a ready and good market for milk, butter, veals, hay, &c. at no great expense of transportation, and where lands are cheap and labor dear in comparison with the price of land, and the production of grain, as with us in Virginia, the limited cultivation and costly manuring system would certainly fail. On our sandy soil, in our climate, the broom sedge will compel a resort to the plough in five years, even if our lands, on being made rich, would suit the grazing system in other respects. I have, from long observation and some experience, come to the fixed conclusion, that the Virginia agriculturists generally should, with a due regard to profit and improvement, (which should be regarded as inseparable,) pursue what is called, the four-shift, or four-field system, and keep a standing pasture, for stock to run upon, until harvest. After this, the field for corn, the year after, may be grazed to advantage, as the clover will be ripe, the stock (which should never be more numerous than sufficient to consume the forage and tread the offal during winter and spring) will keep down the young weeds, and bushes, if any should spring, and give the land a proper degree of compactness to suit the wheat crop. Another advantage, it strikes me, is derived from this grazing the year before corn is planted on the field—all cheat or rye, that may have sprung with the clover, will be eradicated, as well as cockle, and onion or garlick seed. And it is my impression that insects, and even the cut-worm, (that vile pest in cornfields, after clover, will be considerably lessened.*

This system of cultivation in corn one year, wheat another, and rest one year, with partial grazing the fourth, if combined with a judicious appli-

* The grazing of a field must be very close to destroy cheat, as this vile weed will not be eaten by cattle, so long as they can find clover or other palatable grasses. [*Ed. Farm. Reg.*

cation of manure, especially if the auxiliaries of clover and plaster be added, will insure a rapid improvement of the land, while it is yielding a good profit upon the capital and labor, independent of the comforts of living, derived from good stock. If all available means of raising manure were judiciously used, and composts and the fine manure applied to the thinnest parts of the fields as a top dressing on wheat, or to be harrowed in with the wheat, there would be little complaint about clover not taking on our fields. The summer's sun, in droughts especially, kills the young clover that springs feebly on poor land, while a very moderate top dressing gives the young plant such vigor by the time the wheat is taken off, that a severe drought will not kill it. I have never failed to obtain as good a stand of clover as the quantity of seed sown entitled me to expect, when sown on poor land, if a moderate top dressing had been given to the wheat or oats, upon which the clover seed were sown in the spring. It is true, that my clover has not been thick enough to crowd out all weeds or thistle, as I am inclined to think it would do, if twelve pounds of seed, instead of eight, had been sown. Arthur Young recommends a gallon and a half, or twelve pounds, for England, and less would hardly be proper for our drier climate, but for the expense of the seed.—The advantages of thick sowing will be found to exist in the suppression of weeds on the land, by which the seed will be easier gathered, and in greater purity, with a rich cover to be fallowed in, equal to manuring with 25 cart loads of stable manure—the raising, carting, and spreading of which cannot be estimated at a cost of less than five dollars per acre. Hence, it would seem, that by means of clovering, the cheapest mode of improving a country is afforded, where clover is congenial to the soil and climate, or rather, the soil and climate congenial to it, as is fortunately the case, in different degrees, with the greater part of Virginia. In districts peculiarly congenial, rapid improvement has been made, and is still making; and the growing resort to marl and lime, will extend this system to the tide water country, which, without lime or marl, is rather too light and sandy, in general, for clover to succeed well; and on its lightest and most sandy regions, the pea, alternated with corn and oats perhaps, will, even with marl and lime, be found preferable to wheat with clover—so unsuitable for either of these is a sandy light soil.

As a means of increasing the quantity of manure for improving our lands, there are many subjects which are generally overlooked, that, with a portion of well employed labor, would treble the quantity. Woods leaves and litter, rotten trees, scourings of ditches, and low grounds ditch banks, formed into composts heaps, with marl, or lime and ashes, vegetable additions, and rubbish generally from negro quarters—these all combined, with the manure well preserved and applied to the land, with the clover and plaster system on all lands except the sandy, and the pea and corn system on navigable water, would in a few years give a new face to our worn out country.

Having marl in great abundance upon my farm on the Rappahannock, though deeply seated below the surface, and vast quantities of rich vegetable mould, and rich banks on my meadow ditches, from the experiment made, I am confident that it will be the most profitable employment that two or three hands could be placed at, with an ox cart, or tumbrel and two good mules, to raise and carry out marl, and form compost by the year, separate and distinct from the crop hands. Experience will prove, that if a reliance upon the crop-team and hands, for improvement by this means, is the only hope, there will be little done. The overseer, if you have one, (and my professional calls take me so much from home that I am obliged to employ one,) will never find time for this kind of work, in which he takes no interest; and whether you pitch a crop with a view to having it done, or not, you will find the same result: little or nothing can be done. He will let the standard of labor fall to the crop's demand for it, regardless of the manuring claims. This has been the case with me for several years, and I am certain will continue to be the case for ever, unless a distinct force be detached for the sole object of manuring.

Before closing these desultory observations, I cannot refrain from remarking, that we in Virginia pay too little attention to planting, or turning out, and trimming up, in our fields and along our inclosures, valuable trees, either for fruit or timber. Such as the persimmon, black and honey locust, cedar, &c. many of which, except in severe droughts, draw but little from the crop, while they furnish shade and fruit for stock, and the most valuable timber. The locust thrives well, and is of rapid growth on many soils, as well as the walnut and the persimmon upon all. Trimmed so as to have long bodies, they draw but little, and are exceedingly valuable. In Germany, we are informed by travellers, the highways are shaded for whole days' travel with walnut. These rows of trees break the fury of winds, and preserve crops from prostration. There is no subject of rural economy more neglected in Virginia than this. This may be accounted for by the woody character of our country, where, for ages to come, a resort to planting, except for fruit, ornament, shelter or shade, will hardly be necessary. The reservation of timber and fuel, will, for a century, occupy the place of planting for that purpose, which, for want of such reservations, forms, in some old settled countries, a subject of great interest.

In conclusion, I may be permitted to address a few reflections to our society upon subjects, which, though not directly connected with the object of our institution, yet, having a great influence upon the welfare of our portion of the state, especially as slaveholders, may not be considered inappropriate.

The burthen, which, by our revenue laws, is thrown upon our slave property, is disproportionate, in comparison with that of any other; while it is further mulcted with the whole burden of supporting the poor, and nearly all of the county levy for municipal administration. Thus, the principal labor of eastern Virginia is trebly taxed under our state government; and the eastern section of the state, by its vast excess of slaves over the western, is most unequally burdened. In our present condition, with this inequality bearing upon us, and the restrictive tariff grinding us, nothing but rigid parsimony in our indulgences, with marked economy, and untiring perseverance and industry, can sustain us in the slightly advancing position which we now occupy. This position is barely maintained with our present moderate state taxes; but if heavier burdens be superadded, have we not cause to fear that they will prove to be like the last pound that crushed the camel's back?

Our transmountain brethren require improved facilities, for the products of their soil and labor to reach a market; and a liberal and judicious policy has been adopted by the state government, to aid in effecting for them so desirable an object. The joint-stock system, so called, in which the state subscribes 2-5ths against 3-5ths subscribed by individuals, is the plan for executing public improvements by canals, turnpikes, &c.; and considering the circumstances of the tide-water portion of the state, in reference to its large slave population, and consequent heavy contribution in taxes, while scarcely any of the expenditures of the joint-stock system, or any other for internal improvement, is requisite, or if so, is considered to be so, a signal advantage is secured by this system to the upper country. But, not contented with this, and omitting to help themselves, they, with other internal improvement enthusiasts, are for plunging the state in debt to the amount of millions, and under our revenue system, thereby to pledge our peculiar property to raise the interest by taxes to meet the deficiency of tolls upon the works, which they so much distrust their capacity to meet the interest on the cost by tolls, that although their country is to reap the direct benefit, yet they refuse to take up the 3-5ths of the necessary stock by which 2-5ths are to be obtained from the state, under the joint-stock system. Now, it must be obvious to the plainest capacity, that such works of internal improvement as cannot command 3-5ths of private capital for their execution, when by such subscription 2-5ths of aid is to be obtained from the state, with the character thereby superinduced in favor of the enterprise, must be regarded by the projectors, mainly for the local advantages sought to be obtained, at the expense of others, and not of a character to be valuable as stock investment. Otherwise, they would take the stock, if they had to borrow the means, and the works would be made under the general internal improvement system of the state. It is idle for any section of the state, solicitous for a canal or rail road, to complain that it is too destitute of capital to raise the 3-5ths by subscription, or to insure loans to meet it. If they believe that the work is not to be an abiding tax on the state, instead of yielding by tolls a profit on its stock, they should not hesitate to pledge their property for a tax, to meet any temporary and partial deficiency of tolls to meet the interest on the loans to be obtained for constructing the work.—Those who would have their lands benefited by the work, ought to pay for it; and it is a flagrant violation of the principles of the social compact, to fix a burden upon one section of the state, to operate a peculiar benefit to another section. The principle is universal in all good governments, that the benefits and burdens should be correspondent. It is a universal principle of justice, too often lost sight of by legislators. It ought to be inscribed in letters of gold in every legislative hall. It might operate to restrain enthusiasts from pushing their projects, under all circumstances, in imitation of New York, who, by her splendid success in the Erie canal, has run a great portion of our people mad upon the subject of internal improvement. It has been overlooked, or not observed in relation to this grand work, that it was to a superficial observer, a route, of all others in the world perhaps, that presented the surest promise of a trade upon it, capable of affording tolls adequate to a handsome dividend upon the cost of construction. Half, and the richest half, of the state, inlocked, and that rapidly settling by a hardy, industrious and wealthy population, and the junction with the lakes, making the canal unite the most extensite inland ship navigation in the world with the ocean's tide. Indeed, no great credit is due for foresight to De Witt Clinton, for securing this work to the state, as a certain source of wealth; and had it pleased God to have presented Virginia with a similar boon, she would have had Clintons enough to have saved it, to enrich the Old Dominion, long before it was done in New-York, supine as she is charged to be. But, it is out of the question to think of Virginia incurring a debt of eight or ten millions to construct a rail-road or canal, through the state to the Ohio river, in imitation of New-York, when the prospect of a return by tolls to meet the interest is so much doubted, that the intelligent inhabitants of the country through which it must pass, and whose lands must be doubled in value by its construction, show such evident distrust of the value of the stock, that they will not take up the requisite 3-5ths to put the enterprise in motion. I have such confidence myself in the enterprise, that were I a landholder on the route, or adjacent to it, I would not hesitate to adopt the plan of pledging the real estate in the counties to be benefited by the work, for such a tax, as should be requisite to meet the temporary deficiency of tolls for paying the interest on such loan as should be necessary to be obtained for completing the work. This course would be satisfactory to all portions of the state, and would be equal and just. I may say, if this course were to be adopted all over the state, we should see our beloved Virginia advancing in a judicious course of improvement, and the tidewater portion of the state no longer under the ban of oppression, produced by a glaring inequality of the benefits, compared with the burdens, of the state government. Emigration would slacken; and this abused region, instead of returning to a howling wilderness, would yet, by having its energies aroused, and its resources thereby developed, smile like a garden, and teem with a happy population.

JOHN DICKINSON.

CASTOR BEAN OIL-CAKE AS MANURE.

To the Editor of the Farmers' Register.

Williamsburg, Aug. 23, 1833.

I have delayed answering your inquiries relative to the effect, and mode of application of the oil-cake or residuum of the castor bean, after the oil is expressed, that I might ascertain and report to you the product of my crop of the present year, although this is not yet known, in consequence of my not having been able to procure a vessel to take it to market. I have determined, as your patience must by this time be nearly *threadbare*, to make the promised communication at once, particularly as I can from a tolerably correct, though not an accurate estimate of the quantity made.

I have been using this manure as a top dressing for wheat and oats for the last three years. In the fall of 1830 I made the first regular application of it on seven and a half acres of wheat, on which were sown ten bushels of seed. From fifty to sixty bushels were put on each acre. The yield, in this experiment, was twenty-six bushels per acre.

In 1831 I sowed about ninety-six acres, on which were applied forty bushels of the manure per acre. This crop I commenced sowing the 5th October. By the 15th, I had put in fifteen acres. The wheat upon these fifteen acres I am perfectly satisfied, was *two thirds* destroyed by *fly*. I know this, from the circumstance of its being decidedly the best in the early part of the spring, then gradually declining till just before it ripened, and yielding when reaped, not more than one third the quantity of straw that the rest of the land did. The fly was discovered in this wheat before the 1st of November. The last forty acres I did not commence sowing till the 15th November, and did not finish till the 3d December. In consequence of its being so late, I sowed these forty acres (unfortunately) with Mexican wheat. You remember the severe winter that succeeded. It nearly destroyed the whole of it. There were acres on which scarcely a spire could be seen. This crop, under all these disadvantages, yielded 1450 bushels: a bushel and a half per acre was the average quantity sown.

The last fall (1832) fifty six acres and a half (by actual survey) were sown in wheat, at the rate of five pecks to the acre, with forty bushels of the manure. Forty acres of this field had received a previous manuring of the same kind. I have made from it certainly 1000 bushels, perhaps more, which is within a very small fraction of 18 bushels per acre. But for the blast, or scab, or whatever name you may apply to the disease that has been so destructive of our wheat, I think the present would have been much the heaviest crop I have yet made. Last year from 64 small stacks, I obtained 1050 bushels. This year, from 163 of the same size, I shall not, perhaps, get quite as much grain. I should observe that 25 acres of this field was in clover last year, which although much grazed, yield a considerable quantity of vegetable matter to turn in. The clovered land produced the heaviest growth, and a few acres (say 4 or 5) which I had plastered in the spring, was decidedly better than any other part. The plaster certainly doubled the crop of clover.

My mode of applying the manure has invariably been to sow it with the wheat, and cover it with a harrow. I had been told, that about Hampton, the farmers preferred scattering it over the wheat in the spring. In consequence of this information, I commenced two years ago sowing a crop of oats before the cake reached my farm, and had half done it before it got there. According to the Hampton plan, what was finished was top dressed, but not harrowed. The other half was applied in my own way, viz: harrowed in with the seed. The difference was fully 150 per cent. in favor of the harrowing.

My first experiment (1830-'31) was upon land on which a crop of corn had been made. The second was on a fallow. The third on a fallow, of which a part was clover.

The durability of this manure has been and is still very much questioned. That it will cause good clover to grow on the poorest (stiff) land, I have entirely satisfied myself, and can prove to any one who will take the trouble to ride over my farm. The able essay of Mr. Carter of Shirley, is perfectly satisfactory as to the effects of a clover lay. I have never seen the Shirley land, but from what I have been informed, I should think mine is of the same character.

The seven and a half acres of land on which I first applied the oil cake, and which yielded 26 bushels per acre, those best acquainted with the farm will acknowledge would not have produced more than five bushels without it.

The 96 acres which brought 1450 bushels last year, in spite of all the disadvantages the crop labored under, would not, I feel fully justified in saying, under the most favorable circumstances, have yielded more than 700 bushels; and the field of 56½ acres, from which I shall get, this miserable year, 1000 bushels, would not originally have produced 300.*

I observe that a writer in your valuable Register under the signature of "A Gleaner," attributes the virtues of the cake to the oil it contains.† This I know to be the general opinion, but I have never been convinced of its correctness; indeed, I have for some time past, questioned its truth very much. Our press is a powerful one, and leaves a very small portion of oil in the cake. There is moreover other refuse matter in such an establishment as ours, which contains a vast deal more oil than the cake, which I have used as manure, and been uniformly disappointed in its effects. Accident has enabled me, I think, to solve the difficulty, and to declare my belief that the fertilizing qualities of the oil cake reside *chiefly* in the farina it contains. Sometime last year, a vessel laden with flour was stranded near Jamestown and the flour ruined. Mr. John Mann, who owns a farm in the neighborhood, took two or three of the barrels and top dressed a small portion of his wheat with it. I was not an eye-witness of its effects; but I was informed it produced as great an increase of that portion of his crop as my oil cake would have done.

By experiment, I find that 50 bushels of the cake will weigh 1800 pounds; and of this quantity I have discovered that $\frac{10}{18}$ is farina or flour—equal to five barrels of flour. The cotton seed, I fancy, contains more farina, in proportion to the oil than castor bean, and, I believe, would produce as great an effect after being deprived of its oil, as it would do in its original state. I should be much obliged to you to give us your opinion on this subject.

I have thus answered your inquiries as fully as I am able to do. Should any other queries suggest themselves to you, it will give me pleasure to attend to them. THOMAS G. PEACHY.

CHEESE MADE OF POTATOES.

Extracts from the Correspondence of M. Fahnenberg.

Translated for the Farmers' Register, from the "Journal d'Agriculture, etc. des Pays Bas."

In Thuringia and a part of Saxony, they make cheeses of potatoes, which are thought very good. This is the way in which they are made. After having chosen potatoes of good quality, (and large

* There are but few farms in lower Virginia which have produced more than half a crop of wheat this year, owing to the various and disastrous effects of the long continued wet season in May and June—and it is believed that not one has yielded so much as two thirds of a fair average product.—[*Ed. Farm. Reg.*

† Farmers' Register, No. 2, p. 109.

white ones in preference,) boil them in a kettle. When they are sufficiently cooked, take them out and let them cool; then peel them, and mash them in a mortar. To five pounds of potatoes well mashed, add one pound of sour milk, and the quantity of salt necessary: knead the whole, cover it, and let it remain undisturbed for three or four days, according to the season; at the end of this time, knead it again, and place the cheeses in small baskets, where the superfluous moisture will evaporate.

Then place the cheeses in the shade to dry, and put them in layers in large pots, or any other vessels, where they must be kept for fifteen days. The older these cheeses are, the better their quality.

Three sorts of cheeses may be made; the first, which is the most common, is made with the proportions mentioned above; the second, with four parts of potatoes, and two parts of curdled milk; the third, with two pounds of potatoes, and four pounds of cows' or ewes' milk.

Cheeses made of potatoes, have over common cheeses the advantages of not engendering mites, and of keeping fresh for many years, provided you put them in a dry place, and in close vessels.

I have repeated this experiment with the proportions of the second quality, and this is the course that has been pursued. We first cooked the potatoes, then peeled and mashed them with the hands. (We might, if we proceeded on a large scale, make used of the cylinders generally used in distilleries for mashing potatoes.) We then warmed the milk, into which vinegar (in place of rennet) was poured, until it curdled. After this operation, we mixed the milk with the potatoes, put salt into the mixture, and passed it through a sieve of hair to make the mixture more perfect. It was then put into an earthen pan, where it remained for ten or twelve days. At the end of that time we placed it on sieves where it was drained, at the same time that it was moulded. The sieves must be covered with cloth. After draining fifteen days, the cheeses were pressed, and covered over, and placed in wicker work in a cellar. By this time the fermentation was developed, the cheeses still soft, and a skin of mould was formed on the surface. The flavor of cheese was very perceptible; it is not disagreeable, and I believe these sorts of cheeses may be made with advantage on farms. Now that the taste of cheese is well developed, I shall dry them in the shade, as was recommended in the recipe above mentioned, in order to know the quality of the product in this state. I have now shown the reader the consequences of this experiment, which seems to me to be very interesting to rural economy.

SAVING OF LABOR IN CUTTING DOWN CORN STALKS. REMARKS ON CONTRIBUTORS TO THE FARMERS' REGISTER.

Amelia, Aug. 22d, 1833.

Dear sir,—If your numerous patrons could be induced to communicate whatever they consider *good* in *their system* of management, much useful information would in this way be obtained. There are many excellent practical managers in Virginia, who cannot be prevailed on to write any thing for publication. Suppose something like this be suggested through the Farmers' Register—that facts be furnished you, with the understanding that you will present them to your readers in your own way. In every instance the name of the person should be given.

In closing these crude, undigested remarks, I will give the method which I have pursued for several years in cutting down corn, preparatory to sowing wheat. I have no hesitation in saying that half the labor is saved. Instead of using a hoe with a long helve in cutting down the corn, to be picked up by *another hand*, I use a small hoe (which can be bought for fifty cents in Richmond) with a short helve, made of some light wood, such as pine, poplar or walnut. The operator taking the hoe in one hand, and taking hold of the stalk of corn with the other, cuts it down carrying the stalks cut, until he has as many as he can carry. In this way the corn is cut and piled by the same hand, and the picking up, the *worst half* of the labor, is saved. In piling, three rows are laid in one, or six in two; leaving a space along which the cart or wagon may pass, to take the corn off of the land to be sown in wheat. For several years I used knives in cutting down my corn, but found it very difficult to avoid leaving the stubble too long. With the short helved hoe the corn can be cut as close to the earth as with the long.

Thus, sir, on the plans suggested, I have given you the facts respecting my plan of cutting down corn. You will dispose of them as you please. For the inelegance of style, or other defects in communicating the facts, if *published*, I hold the editor of the Farmers' Register responsible.

Respectfully yours,

JOHN H. STEGER.

P. S. I have used the term *my plan*. It is proper to say that with me the method did not originate: I learned it from a friend in Louisa. I introduced it in this county and in Powhatan. As far as I know, the old plan of cutting down, and picking up, still prevails.

J. H. S.

We are very willing to incur all the responsibility of publishing the foregoing communication, and without changing a word—though we should certainly have used the privilege of altering the form, if it had been thought necessary. The communication of our friend and correspondent is just such as are most needed, and might be most abundantly supplied, for the Farmers' Register—a statement of useful facts, in plain but correct words. We recommend both his suggestion and his example to others. Every real improvement in the mode of applying labor by one individual, however inconsiderable, is worth communicating for the use of others: and if such was the course of every one of the patrons of the Farmers' Register, it would from this source alone, humble as it may be considered, derive and dispense more valuable information for farmers, than has yet been done by this or any other journal. It would become a literary *savings bank*, from which each customer would obtain a thousand fold increase upon his deposit.

QUERIES IN MARLING—IMPROVEMENTS IN LOWER VIRGINIA.

To the Editor of the Farmers' Register.

August 30th, 1833.

I belong to that very small class of farmers, or rather agriculturists, who are not too wise in their own conceits, to be both willing and desirous of being taught by their more experienced brethren; and not knowing any person better qualified than yourself to instruct us,—especially on the subject of marling our lands, I take the liberty to suggest the following queries, which I will thank you to answer as soon as your convenience will permit.

1st. How often can the application of marl be beneficially renewed: in other words, how long will one marling, in the quantities which you recommend, which I understand to be from 250 to 800 bushels per acre, according to the quality of the soil, continue to produce an equal annual benefit in similar seasons?

2d. What proportion of carbonate of lime should marl possess to pay for the expense of applying it, where the cartage does not exceed 1 or 2 miles?

3d. Is there any other advantage in exposing marl to the winter frosts, than to lessen the expense of pulverizing it by artificial means?

4th. Is it best to keep marl as near the surface as possible by top dressing, or to plough it under before the crop, be it what it may, is sowed or planted?

5th. Is marl equally beneficial to all our usual crops in Virginia; if not, what are the exceptions, so far as your experience enables you to judge?

6th. Have you ever tried its influence upon such vegetables and fruits as are commonly cultivated in our gardens? If you have, what has been the result in regard to each?

7th. Is it as beneficial to lowland as to upland?

I am sorry to trouble you with these inquiries; but believing that your answers will highly benefit the agricultural public as well as your old friend, I hesitate not to avail myself of this mode of eliciting your opinion.

At the same time, I beg you to accept my cordial congratulations on the rapid success of your Farmers' Register, which I hear every where spoken of in the most favorable terms. This paper together with your book on marl and marling, have already caused our mother earth to be so perforated and pierced with marl augers, that I am sure we should hear her groan most piteously, were she capable of it. The worst of it, too, I fear, will be, that all this boring, and eviscerating, and vinegar effervescing, and wondering how the strange shells that we dig up, found their way into the places where we find them, will end with most of us, like old George the Third's puzzle about how the apples got into the apple dumplings—in little more than mere talk. Out of the many hundreds, perhaps thousands, who will make what they call "marling experiments," very few will perform them in a way to obtain any certain and satisfactory results. No analysis will be made, either of the marl itself, or of the soil to which it is applied; no measure, but by the eye, will take place, of the quantity used, or of the space on which it will be spread; no marking off the spots for deposit, to secure equal distribution; but the overseer, or most probably the cartman, will generally be left to regulate the matter by his eye; scarcely any two parcels will be of the same size, being carried out in whatever kind of vehicle—from a wheelbarrow to an ox cart or wagon, can most readily be obtained; each will be loaded according to the laziness or industry of the driver and those who fill for him; and the whole quantity carried out will probably fall far short of the quantities which you recommend. Yet these very experimentalists, although without a right to expect much, if any benefit whatever, will be the first and loudest after failure, in proclaiming marl to be good for nothing. Others again will probably reach no nearer point towards a trial of their marls, than to carry selected shells as specimens, to the nearest of those innumerable places of idle resort, so baneful to our state, where the quidnuncs of every neighborhood, (and where is there one without them,) resort to settle the affairs of the nation, and—to drink grog. I most sincerely hope that I may not prove a true prophet in this highly interesting matter; but that the most sanguine of your expectations relative to the improvement of your tidewater country from the extensive use of marl, may be fully realized. That something must speedily be done towards it, if the present owners mean to escape ruin, is quite as certain, I think, as any prospective event can be: and that this *something* is, either your plan, or one like it in all essentials, appears to me equally sure.

One of three things a large majority of us must do: improve our lands extensively and constantly; or be content to live on them under rapidly increasing privations; or troop off to some new country, I say a large majority of us *must* determine between these courses; for an immense portion of our tidewater lands is either utterly exhausted by reckless cultivation, or never has been sufficiently fertile to admit of profitable tillage, unless by manuring at an expense twice or thrice as great as the selling price of the land itself. This I venture to affirm from personal observation,—even at the risk of offending the Virginianism of a certain correspondent of yours, who seems quite as touchy in regard to the character of our soil, as if it were identified with that of our people themselves. But, Heaven help us poor tidewater folks, say I, if land which may literally be said to be "born poor," be any disgrace to us! In this respect, the only real disgrace which attaches to us, is one that all the newspaper writers in the Ancient Dominion can never wipe off. It is,—that so few of us make any adequate exertions, either to save our good lands from irretrievable impoverishment, or to render the bad as productive as we might;—would we only abandon gadding about; would we study agriculture instead of party politics; and engage with steady, unflinching zeal, in the pursuit of our own proper business, rather than demagoguing of it, (if I may coin such a phrase,) about the country, setting quiet neighbors together by the ears about Jacksonism, and Clayism, and God knows how many other kinds of *isms*; and tempting industrious men to neglect agriculture, for popularity hunting. This is truly a miserable occupation for the owners of lands exhausted by a century or two of destructive cultivation, unaided by any kind of ameliorating process whatever; and cannot possibly end but in ruin, or emigration to soils of such natural fertility, as to yield good crops,

even although their proprietors should spend the greater part of their time in seeking those political distinctions and notoriety for which nature never intended them. The truth is, that far too many in the Ancient Dominion—too many certainly, for that agricultural improvement of which the good old state stands so much in need, are, and I fear will remain for years to come, in the situation of Beau Clincher in the "*Trip to the Jubilee*," who, upon being asked, what was the matter with him, replied most laconically,—"politics and brandy." *These*, Mr. Editor, are the two diseases which obstruct the progress of good husbandry among us more than all other causes put together; and until you, or some other doctor, can cure or greatly mitigate their virulence, will retard, most lamentably, the good which your very instructive and useful paper is calculated to effect. That we may both live to witness this good widely diffused over our poverty-stricken fields, is the sincere and constant wish of your old friend,

CORNPLANTER.

ANSWERS TO THE FOREGOING QUERIES.

We will endeavor to answer the queries of our highly esteemed correspondent as well as the space will admit, within which it is proper to confine our editorial remarks: and even this cannot be done without our being guilty of the indecorum of referring, for reasons and details, to the volume of which CORNPLANTER speaks in such kind terms. The answers will necessarily be defective and incomplete, as here presented.

Answer to 1*st Query*. The beneficial effects of calcareous manures are permanent; and will continue forever to be at least *equal*, if not superior, to those first experienced, provided the soil is kept under meliorating culture. But still, a second dose of marl (or other calcareous manure) may be beneficially applied, to secure an increase of profit, whenever so much vegetable or putrescent matter has been added to the soil (by manuring or by rest) as to need more of the calcareous to combine with, and retain it. [Essay on Calcareous Manures, chap. 15.]

2*nd*. It is impossible to answer this satisfactorily, as so many and various circumstances might operate to affect the expense and profit. But it may be stated in general terms, that marl containing 50-100 of carbonate of lime, would be profitably carted from one to two miles, to a suitable soil—and the most suitable is either the most *acid*, or that having the most abundant supply of vegetable matter, whether furnished by nature, or by manuring. [Chap. 16.]

3*rd*. There is no advantage in exposing marl to the winter frosts, unless it has lumps, which freezing will pulverize: and there is a disadvantage, if it remains in heaps, as they are less easy to spread after becoming compact.

4*th*. It is best that the marl should be mixed as equally as possible with the whole of the tilled soil. Either as a top dressing, or turned in deeply and completely by a single ploughing, it will produce but littte benefit, until mixed with the soil by after tillage. [Chapter 14.]

5*th*. Marl is most beneficial to clover, and (it is believed) to all plants of the clover or pea tribe. Wheat probably receives more aid from this manure than corn, on light soils, by their being rendered more close and firm; but there is not much difference in the rate of improvement made on any of the grain crops. Cotton receives an additional aid, by being made to ripen earlier, and thereby to perfect pods which would otherwise be damaged by frost. The effect of marl on tobacco is not known.

6*th*. Except on peas, no considerable effects have been observed on garden vegetables and fruits; nor have any experiments been made to obtain such facts, because the great quantity of putrescent manure used in our gardens, would serve to conceal the effect of marl. Nevertheless, if the theory of the action of calcareous manures is not mistaken, the benefit from marl must be far greater on a garden, than elsewhere—not so much by aiding the growth of plants *directly*, as by preserving the moisture and the putrescent manures received by the soil. The difference would be precisely the same as between gardening on one of the best natural soils, and on one of those "born poor," in like seasons, and with equal supplies of putrescent manure. [Chap. 8.]

7*th*. It is not as beneficial to apply marl to most lowland as to most upland, merely because the former kind is generally of better natural fertility: but acid lowland, or such as will produce sorrel freely, would be more benefited, than upland of the best quality.

For the Farmers' Register.

LONG ISLAND FARMING—COST OF MANURE, AND VALUE OF LAND—JERSEY MARL, OR GYPSEOUS EARTH.

Long Island, (Bath House,) Aug. 30, 1833.

In getting to this place, I have passed through the finest country I have ever seen. One from our part of Virginia would suppose that he was passing a village nearly the whole way, so thick are the settlements on the road. I have learned, since my arrival, something of their mode of tillage—and great as is the expense of manuring, (which they all agree to be absolutely necessary once in 5 years,) to use their own language, "it pays well." Yesterday I had an opportunity of forming an idea of this expense. At high water, I saw a schooner nearing the shore, heavily laden. Her cargo proved to be manure from the streets of New York, which cost the farmer, on board, in the dock, 30 cts. per load of 14 bushels. The freight was 21 cts. per load; and not having a landing of his own, he was charged $1 for the privilege of "dumping" (as they call it) on the land of a neighbor. The cargo was 100 loads of 14 bushels, equal to 50 wagon loads of 28 bushels, which would cover two acres of land, as the owner informed me. As soon as the vessel grounded, (which was very near the beach,) and the tide had fallen a little, the farmer himself, with one wagon, and a colored man (hired at $8 per month) with another, commenced to "ride it" (as they termed it) from the vessel to the dump, a distance of 100 yards perhaps. The sand on the beach was very deep—but this they hardened immediately by putting straw along the track, which in a few moments afforded a very good road. The tide receded so much as to leave the vessel bare, and before it came in again, so as

to interfere with them, the whole of the manure was taken out by these two wagons, with the assistance of one more for three or four loads. This they might have dispensed with, and have finished before the tide would have prevented work. There were four men on deck to load the wagon, three of them belonging to the vessel, and one furnished by the farmer. This manure was now to be hauled one mile farther to put on the land for wheat, which crop they calculate generally will pay for the manure. The land will be seeded in clover and timothy, and cut three years in succession—then one year in corn, one in oats, after which comes the manuring, with wheat again. The first thing that suggested itself to my mind, was the great advantage which might be derived from the use of marl, or lime. I asked if it was ever used, and was told very promptly that it would not answer here, because of the influence of sea air. I asked how this was ascertained: the answer, was, that plaster of Paris had been tried, without success, and had been abandoned on the island. I was told that a neighbor had tried marl from the Jersey shore this last spring, for corn; but no benefit had been seen on the crop. This I will endeavor to account to you for, and must see the proprietor of that farm—I will, for a moment then, stop my communication, and see him.

Well! I have returned from a visit to this gentleman, and have a specimen of two kinds of the marl (as he called it) for you. On my reaching home, I thought I would try a little vinegar on them. I doubted them on sight to be marl, recognizing in the best, as he considered it, gypseous earth that abounds at Coggins' Point. There was no effervescence perceivable with vinegar, which of course satisfied me that there was no calcareous matter. Now I am able to account to you somewhat for the unwillingness to try marl on Long Island. The people here, like all others in the world, are disposed to pursue the steps of their fathers, and any innovation seems to be treated as something unwise, and ruinous to the lands, here. This gentleman, whom I have visited, I found to be an intelligent Scotchman, anxious to do all he can for the improvement of the soil, but discouraged by all around him, because he does not pursue the same plan with themselves. He procured these two parcels of marl (I say gypseous earth) at great expense: he had sown a little clover in his yard, and in one corner of it he had thrown about one quart of this earth on about three yards square: he took me with him to see if any good had been produced, and we saw the effect at once. The clover on all the rest of the yard seemed nearly gone, whilst this was thickly set. He is anxious to sell out, and a few days ago offered his farm at public auction. It contains 35 acres, has a dwelling house and barn on it, and some few outhouses. One bid of $7,250 was made, and the owner bid it in, at an advance of $250. This would make our Virginia farmers stare—indeed, few will give credit to it, I am afraid. I therefore wish you to know that it is within 9 miles of the city of New York. Twenty-four acres adjoining has been sold, by the gentleman with whom I am now boarding, at $3000: and he tells me it cannot now be bought for $4000. This has no house on it at all.

I forgot to mention, in the proper place, that the common crop of hay on this land, after the manuring, for three years, was about three loads of one ton each, making 6000 weight, and the average price 75 cents per hundred. The next crops are corn and oats, which, I suppose, pay nearly as well.

I have written this in much haste: if there is any thing worth your notice, you can extract it, or do with it as you like.

Your's, &c. C. H. M.

The foregoing communication furnishes information well deserving attention, and which causes us to regret that our friend did not extend his remarks farther, on facts, which so judicious an observer knows well how to estimate. Independent of the particular facts here detailed, the communication is valuable as an example to our many patrons who travel for health or for business, and who could find so many good and interesting subjects for communications to the Farmers' Register. We hope that we shall be indebted to C. H. M. as well as to others, for more aid, obtained in this manner. The facts presented in the foregoing letter, well deserve a much longer comment than we shall now offer.

The cost of the manure to the Long Island farmer was as follows:

100 loads (of 14 bushels) bought at 30 cents,	$30
Freight, at 21 cents the load, - - -	21
Rent of landing place, - - - -	1
	$ 52

This, for two acres, makes the cost, *in money*, $26, the acre, for a single manuring, to be renewed every five years. The labor of unloading the vessel, and of afterwards drawing the manure a mile, form additional expenses, which we will leave for others to estimate; but this labor alone is as great as the whole average expense of using marl on the farms where it is found, throughout lower Virginia. This land, which is manured at such enormous expense, yet gives so much profit on its cultivation, as to sell at prices varying from 125 to 220 dollars the acre. We are not acquainted with the land of Long Island, except from the observation and accounts of others: but these afford enough indirect proof that the soil is very far from being naturally well constituted, or being the most suitable to be benefited by putrescent manures. The great value there found in wood ashes as manure, and the high prices paid for them, and the inefficacy of gypsum, indicate that the soils of Long Island belong to the *acid* class—and, as our friend infers are just such as would receive most benefit from marl, or calcareous manures in any other form: And at this time, they could receive greater (because durable) improvement from marl from the waters of the Chesapeake, at much less cost than that of the customary manuring.

Perhaps some reader may ask, "Of what possible use to us can be the examples of the farmers who are so differently situated, that they can afford to pay as much for manuring one acre, as we can buy the fee simple of ten for? Such examples are certainly not for us to follow to the full extent—but they teach most impressively this truth, of universal application—that the amount of expense in manuring is unimportant, provided the crops derived therefrom repay that expense with sufficient profit.

That the Jersey "marl" is *not* a calcareous manure, and is identical with the *gypseous earth* of James River, are important facts, for which we are first indebted for proof, to the observations of our correspondent. These inferences were drawn from indirect evidence, and were maintained by argument, in the account of *gypseous earth* in our last number, (page 211 :) now, they are established as facts, by the personal observation of one who knows well the appearance and distinguishing properties of both marl and gypseous earth, The "marl" used on acid soil on Long Island, being found to be, in truth *gypseous earth*, serves at once to explain why the latter manure was worthless, and why the true marl, (as in Virginia also it is improperly called) or calcareous earth has been considered as no better. When we begin to call things by their right names, or at least, to use the same name for the same thing, we shall have overcome one of the first and greatest obstacles to the spreading of agricultural information.

[*Ed. Farm. Reg.*

For the Farmers' Register.

THE SPANISH THISTLE.

In 1810, or the following year, when the merino speculation raged in this country, and so many sheep were imported from Spain, they introduced a new plant, which promises to have more important effects on our agriculture, than either the profits or losses then caused by the purchase of the merinoes. The Spanish thistle, the burs or seeds of which were brought on the wool of the sheep, was soon after seen for the first time, growing on waste spots of our seaports, and other towns, where these sheep had been landed, or brought to for sale. Few as they were at first, their being so well armed with dangerous thorns kept off both man and beast, and they have continued to maintain their ground, and to increase slowly to this time—and will finally overspread the whole country, unless some combined means are used for the destruction of this enemy. The vacant lots of Richmond, Petersburg and City Point, are well set with these thistles, and some few country homesteads are also supplied. Fortunately, their spreading has yet been slow. Though full of small burs containing seed, which, when ripe, attach themselves to any animal that touches them, (and in that manner are easily and extensively spread abroad,) yet the many and dangerous thorns with which the plants also are covered, have kept off intruders, and thus generally prevented the seed being carried off. But when the thistles are so extended as almost to cover the food of half starved cattle, the fear of the thorns will not prevent the burs being reached, and carried by animals over the whole country. This growing pest, however inconsiderable now, is one of the many things in Virginia which need legislative interposition, to guard the interests of agriculture. At this time, one or two hundred dollars worth of labor, judiciously applied, would probably eradicate this plant completely, in every place where it is fixed in Virginia. But, as no combined efforts will (or indeed can effectually) be made by individuals for this purpose, this now small evil will be allowed to increase without obstruction, until it will be beyond the power of man (even if aided by law) to remove it, and until its annual damage to agriculture, will be a hundred fold greater than its total suppression would now cost. If a penalty of $20 for every plant bearing seed, or standing as late as July, was imposed by law on every corporate town, and on individual proprietors in the country, the whole race would be destroyed in two years. No one would pay the fine, nor would suffer any other inconvenience, except furnishing the very little labor required for grubbing up the thistles. As yet, all these plants are near dwellings, and under the view of the owners; and none could escape observation and destruction.

But, however desirable and valuable may be the end proposed, and however cheap the means, I am well aware that no such legislative aid is to be expected for agriculture. Such measures are opposed to the genius of our people, and to the self interest of our rulers. In Virginia, where the whole political power is in the hands of farmers and landholders, agricultural interests alone are never guarded, and are often sacrificed. If (for example) it was proposed in our legislature to adopt measures for the destruction of Spanish thistles, the proposition would at first be met by ridicule and contempt : the whole subject would be pronounced unworthy the attention of a dignified legislative body—and by a misapplication of a sound maxim in political economy, (which it is to be regretted is not always applied at proper times,) it would be said that "every one should be left to manage his own business," and to destroy or preserve the growth of Spanish thistles as to him it seemed most fit. If by possibility such a law could be passed, it would put the country into a ferment, equal to that caused formerly by taxing dogs to save our sheep from destruction, and would be attended by similar consequences. Fifty new candidates would claim office, upon the demerits of the thistle law. Twice fifty long speeches thereon would be delivered in court yards, in which the "expediency" and "constitutionality" of the law would be contested—its injustice, its interfering with the "natural and political rights of man" to grow thistles if he chooses it, would be denounced—its "*partial operation*," as being intended to benefit only a few spots of Virginia, at the expense of the whole commonwealth—and finally, (the crowning, and always victorious argument,) it would be declared as oppressive and unjust, that the *poor man*, the tenant perhaps of only a little patch of neglected ground, should be made to pay a tax, or perform a service, to prevent the lands of his rich neighbors being set with thistles, and their fleeces being injured by burs. Enough of these orators would ride into office upon the Spanish thistles, (would that all such were *literally* so seated,) to repeal the law for their destruction, before it could have effected its end, and thus restore the former reign of "justice and equal rights."

I do not expect this subject to be brought before the legislature of Virginia ; but as every other new proposition for the benefit of agricultural interests may be opposed by precisely the same general arguments as the foregoing, it is possible that these *heads* for a speech may yet be brought into use on some other subject. If, then, my recommendation fails, I must be content with having acquired "sufficient glory" in providing arguments for the supporters of the opposite side : and whenever they are used, I shall certainly claim them as "my thunder."

R. N.

DESCRIPTION OF A SIMPLE AND CHEAP THRASHING MACHINE.

To the Editor of the Farmers' Register.

Brownsville, Granville, N. C.,
August 20th, 1833.

Permit me to congratulate you, and the agriculturists generally, on the success of the Farmers' Register. The persual of your first numbers has excited a hope which had almost perished, that this most valuable and important subject, the cultivation of the soil, is about to assume the dignified attitude amongst intelligent men, to which it is so justly entitled.

The fact that so little of science and intelligence is directed to this subject, is a melancholy truth, which every friend to the interests of the southern states must deeply deplore. Let every farmer unite and concentrate his efforts to diffuse the light of experience, and every one should feel bound to communicate whatever he may have learned or discovered, which may improve the soil, and promote its increased production. Then, and not till then, will the restless spirit of emigration be checked, and the peculiar natural advantages of our climate and soil be developed.

Perceiving in your prospectus and general and pressing invitation which you have given to all agriculturists to communicate whatever they may think valuable, or in any way calculated to increase the facilities or profits of farming, I propose to present, through the medium of your journal, a description of a wheat thrashing machine, which I have used for three years past, and which, for its cheapness and efficiency, surpasses any which I have seen. The one which I have, if well attended, will thrash from 100 to 150 bushels in twelve hours. I have commonly used four mules; but if the power wheel were larger, two would be amply sufficient. The machinery for propelling the thrasher was originally a part of a cotton gin; and I have ever since I used it as a thrashing machine, been in the habit of removing the thrashing apparatus and replacing the gin at the proper season for picking cotton. The power wheel is only twelve feet in diameter, which, with one horse, is sufficient to give all necessary velocity to a gin, but not so with the thrashing machine. If that wheel were eighteen feet in diameter, the use of two of the mules might be dispensed with—and the motion of the two which pulled it, be much slower. The power wheel with upright cogs works into a trundle head, or wallower, on the end of a horizontal shaft; on the other end of this shaft is a band wheel, which should be as large as practicable in a room not inconveniently high pitched. The band works over the shaft of the beater, which is so constructed by bands on each end of the shaft, as to turn the two cylindrical feeders. There is also a small wheel so constructed as to move backwards or forwards, and to be fastened as you may wish by a nail or pin put through a hole, whilst that wheel presses on the band and lightens or slackens it at pleasure. The beaters are about three feet six inches long, made of seasoned white oak, and morticed into arms, which are morticed into the shaft; and each beater is faced with sheet iron well secured on. At each end of the beaters there is an iron hoop fitting exactly to the inside, and screwed firmly to them. Under the beaters and upon the apron of the machine, there are a set of ribs coming within one and a half inches of the beaters, and fixed on a wooden spring, so that they may have one and a half inches additional play; and each faced with sheet iron, as the beaters are. The whole is enclosed by a cover made of boards. It may be also worthy of remark, that the builder of this machine constructs moveable ones upon the same principle, and which I hear perform better than my own. The beaters, when the machine is performing good work, have a velocity of about 350 or 400 times in a minute. The wheat is beaten out remarkably clean, and I find a great advantage in a two-story granary, the machine being up stairs, and some strips of white oak nailed over the hole through which the wheat and chaff fall below, separate the straw, so that one hand can rake away, and throw it out of a window. Two hands are required to feed and two to hand the wheat. If care be taken in building the granary with a platform about 18 inches below the door, of sufficient width, wagons and carts are unloaded so that the wheat can be readily handed to the upper floor. The cost of the thrashing part of the machine is thirty dollars; (and as I am informed) they can be made and delivered at Clarksville, on the Roanoke, for that sum. Any good workman can make the propelling power. The entire machine made so as to be moved about, can be made for $85, and a very practical and intelligent gentleman told me that his could thrash from 150 to 200 bushels a day. The maker of the above machines is Bartholomew Kimball of Granville, who claims to have much improved them of late. I have been accustomed to Cochran's, Exall's and Clarke's machines, which are costly and easily broken; and from the number of cast-iron wheels, very inconvenient of repair to a country farmer. I have no hesitation in declaring that this machine is greatly preferable to either (if for no other reason) for its cheapness and simplicity. Any common workman can repair it if out of order. I have also discovered an admirable preventive for those most inconvenient evils, (to wit,) the great heat produced by the gudgeons in the shaft of the beaters, by rapid motion, and their great liability to early wearing out. Instead of a metal *ink* for the gudgeon to run upon, let a piece of very hard pine knot, such as is good *lightwood*, be sawed off, and dove-tailed in, so as to present the end of the grain instead of its side. The friction is much decreased, and this wooden ink lasts very long, and is easily replaced.

If you should deem this communication of sufficient interest to give it a place in your journal, you can do so, and I shall be amply compensated if any farmer shall be induced to try the machine; for I feel well assured that he will be compensated in one year, if his crop be large, for the expense incurred in the purchase.

ABRAHAM W. VENABLE.

P. S. A band wheel is greatly preferable to a cog wheel, first on account of its cheapness, and secondly, if the machine chokes, the band slips and affords an opportunity to relieve it, and is not broken as it would be if cogs propelled the thrasher. The whole of the framing, (on which the thrashing machine runs) should be of well-seasoned substantial oak. A. W. V.

THE ANIMATED OAT.

To the Editor of the Farmers' Register.

There is nothing, perhaps, more admirable in the economy of the Vegetable Kingdom, than the various means used for the diffusion of seeds. Some, such for instance as those of the common thistle, are attached to a kind of down so light and buoyant, as to float in very slightly agitated air, and by high winds are wafted many miles from the parent stem. Others, again, are enclosed in berries, which are swallowed by birds as food; but, being sufficiently hard to resist destruction by the digestive powers of the animal, are deposited in the most distant parts of the earth fit for future germination. The misletoe, which takes root only on the trunks or limbs of trees, by a singular provision of Providence, is planted, with the assistance of the feathered tribe, in the following curious way. Its seed are enveloped in a viscous pulp, which adheres to their beaks whenever they eat of them; and this they can only get rid of by wiping them upon some hard substance to which it will stick. The seeds, in their gummy covering, are thus transferred from the bills of the birds to the limbs or trunks of trees, and there shoot up into the little green bushes so familiar, I dare say, to most of your readers. Again; the cocoa tree generally grows on the borders of the sea, into which, or within reach of the tide, it drops its enormous nuts: these being closely shrouded in a thick, but light spongy hull, which is impenetrable to water, float for a considerable time, at the mercy of the winds and currents, until at length they reach some distant shore, and there reproduce their kind. Many other seeds have a sort of thorny covering, by which they are attached to the hair and wool of beasts, and are so preserved as far as the animal may happen to travel. In all the operations of which the foregoing are but a few examples, the wisdom and benevolence of the Creator are manifest. Various as are the modes, the final cause is the same, the dissemination of the seeds of every plant throughout every region capable of sustaining its growth.

These remarks, Mr. Editor, are merely intended as a preface to a small matter which has recently engaged my attention, and to which I will now proceed to draw yours, under the impression, that it may interest many of your subscribers, even should it be of no actual service to them in an agricultural point of view.

The oats accompanying this communication, were part of the produce of a few which were obtained, I believe, from some ship that arrived in the James river during the year 1831. They reached the friend of whom I received them through so many different hands, that he was not able to learn either the name or the origin; but to me they really appear to have been formed by nature in sportive imitation of *insects;* nor does it require any very great stretch of the imagination to suppose them endowed with life. This *insect*, or *animated oat*, is somewhat larger than the common oat, the body being covered with a thick close coat of brown fur, or rather, in appearance, short hair. It has two long beards or horns, knee bent, and in other respects nearly resembling the legs of the grasshopper. Before the seeds are separated from the plant, there is a further likeness to the insect tribe, each one having two leaves which serve to inclose the seed when green, but which, in its ripe state, stand off like short wings. These, however, being then but slightly attached, are soon lost. The *form*, however, of the oats, is the least curious part of their resemblance to insect life, for when made suddenly wet, and then laid singly upon a table, their legs, as I have described them, begin slowly to move, and, acting as levers on the table, turn the seed over and over, giving to them the exact appearance of some little animal just struggling into being. This motion continues as long as the grain is moist, but as soon as dry, all again is perfectly still. Should you or any of your readers, be able to throw additional light upon the subject, I shall be pleased to get it through the medium of some subsequent number of the Register. S.

AN EXPERIMENT ON OATS.

For the Farmers' Register.

Having sown the same oats for several years without changing the seed, my crops became fuller and fuller every year, of the *black dust head*, or *blast*, until the loss from this cause amounted to one-half of the crop; and when thrashed out, the black dust was so suffocating, that the laborers were made sick by it. I determined in the spring of 1832 to change the seed, and got 100 bushels of the purest seed that could be procured in Richmond: they did not quite hold out to sow all the land intended, and I had to use some of my own impure seed—which I washed effectually in very strong lime water, and allowed them to remain in the lime water one night before sowing. It proved an effectual remedy: the product was decidedly more clean on harvesting, than that from the seed procured in Richmond, although that was tolerably pure. H. C.

QUERIES AND REMARKS ON THE IMPROVEMENT OF LANDS.

To the Editor of the Farmers' Register.

Louisa, Sept. 3, 1833.

Sir,—Cannot you publish something for the encouragement of poor farmers who live in a poor country where we can get neither lime, marl, nor plaster, without paying almost the worth of the land per acre to be manured? Is there really any virtue in burnt clay? That is the only source of manure accessible to myself, and many others around me—all the manure of our farm pens, after using all the straw, shucks and corn stalks we can raise, only serves to cover a few acres, after supplying our gardens and turnip patches.

Be pleased to recollect, Mr. Editor, that all your subscribers do not possess such estates as Wyanoke, Shirley, &c. but are small farmers, have but a weak force, and poor lands to cultivate, and who are still anxious to remain in the "Old Dominion;" but, unless they can fall on some plan, different from what has been pursued for years, must, of necessity, emigrate. Cannot you, sir, I earnestly and respectfully ask, help us to devise some means, with our feeble resources, of improving our impoverished soils, without relying on liming, marling and plastering? These remarks are respectfully submitted, *not for publication*, but to elicit some information useful to

A POOR FARMER.

To inquiries thus addressed to us personally, we should be wanting in respect to the writer, not to attempt some reply, however incapable we may be of answering satisfactorily.

We regret, not less than our correspondent, that the agricultural instruction which we have so far been enabled to offer to our readers, has been so little suited to the farmers of the middle region of Virginia—and we are ready to repeat the confession, before made in general terms, that however we may lament this deficiency, we are unable to supply what is wanting, by any direct, or individual efforts. But, *indirectly*, and as the humble organ to receive and distribute the knowledge obtained from others, we can do much—every thing, indeed, that our correspondent wants. No where can better information be obtained, than in this region, and no where is there to be found in Virginia, better farming, both for present profit and future improvement. It is delusive quackery to promise that all soils, whether above or below the falls, can be improved profitably. We are well convinced that the contrary is true, and that no where (unless in gold hunting) can labor and capital be less profitably employed, than in tilling, and attempting to enrich, unimproveable soils. But the soils of the middle country in general, had far more natural fertility than those of the lower, and can be, therefore, more easily enriched by vegetable manures—and may better dispense with the calcareous manures, which alone can render valuable the soils naturally poor. The first and all important means for the improvement of the lands of this region, is to collect the mass of valuable information now existing, and in profitable operation on the lands of many farmers, who are, doubtless, well known, at least by reputation, to our correspondent. If these individuals will not offer the aid and instruction which they can so well furnish, let others go to their farms, to seek, collect, and report what they may gain, for the benefit of all.—If our correspondent will try the experiment, by making a farming tour of 8 or 10 days, we will engage that he will be individually rewarded tenfold for his labor and time so employed, and that his notes will furnish an excellent article for the Farmers' Register. Putting aside the latter consideration, (though most important to ourselves,) we believe that every farmer would gain by thus visiting and learning the opinions and practices of others. While the Farmers' Register continues to exhibit a deficiency of information, suitable to the farmers of central Virginia, where so much might be obtained, that deficiency ought to be ascribed to the sources proper for the supply, and not to the channel offered for its conveyance and distribution. However, we hope that no such ground for complaint will be suffered to exist much longer.

The bulk and costliness of lime and marl, must forbid their profitable use to the greater part of this region, under existing circumstances. But even here a wide field will hereafter be opened to the use of these manures, by the improvements of water carriage, and the opening and use of the narrow strip of limestone which runs east of the Blue Ridge, and of the argillaceous marl lately discovered in Prince Edward, and the adjacent counties. But even now, it cannot be too costly to convey gypsum to any soil on which it can exert its full power.

We are, like our correspondent, in much doubt as to the value of burnt clay as manure, of which, however, we have no personal experience. We have already laid before our readers, some of what appeared to be the most precise information on this head; and might easily select ten times as much from other sources, without making the matter more clear. These, however, are the general facts to be derived from all these pieces. The burning of clay for manure, extended rapidly from Ireland, where it was begun, through England and Scotland—was extolled as a cheap and efficacious means for improving land—and then, without any marked contradiction to these first opinions, was allowed to go very generally out of use. The authority of books strongly maintains the value of the manure—but its practical disuse seems to contradict that opinion with still more force and effect. [*Ed. Farm. Reg.*

THE CALCAREOUS SOILS OF ALABAMA, AND THEIR EFFECT IN PRESERVING HEALTH.

To the Editor of the Farmers' Register.

Mobile, August 24, 1833.

I have long entertained the opinion that Alabama possessed the means within itself of perpetuating and even improving the fertility of its soil, from the immense quantities of calcareous formations that abound both on the Tombeckbee and Alabama rivers, I believe I may venture to say, from their sources to their mouths—and that are diffused throughout the whole extent of the prairie region; and that these means were more ample than were possessed by any other of the southern states.

The fine rich prairie soil is calcareous manure itself, tempered by nature with the most happy combinations of silicious earth and vegetable mould: and the quality of the soil rises just in proportion to the justness of these combinations. In some places the calcareous formation approaches quite to the surface, and makes what are called "bald prairies," these sometimes cover as much as an acre, perhaps more, perfectly white and thick; but they are rendered productive by the addition of sand, and by ploughing—(being generally soft enough to yield to the plough)—and as soon as grass and weeds, or a crop of corn or cotton can take root, and leave a vegetable deposit, these bald plains grow black, or at least of a much darker shade. It is astonishing with what facility vegetable substances are decomposed in the prairies and rendered subservient to the improvement of the soil. There is another fact connected with this part of the subject, that strongly corroborates your views regarding the healthy action of calcareous earths on putrescent matter, contained in a "Supplementary Chapter," on that subject, in the second No. of the Farmers' Register. This fact is, that the prairies have proved to be the healthiest parts of the state—notwithstanding the water is to all appearance bad, and is unquestionably very unpleasant to the taste of those most used to it. The calcareous formation forms a substratum for the whole extent of the prairie country, and is accessible at the banks of every creek and gully, and I have discovered it in various places at considerable distances from the prairies. In most instances it is white as chalk—sometimes it is blue—and in all cases it abounds with small sea shells almost decomposed. By cutting it with a saw and planing it, (as is often done for building purposes,) you see the lines or sections, of the shells; by breaking it, you often

see the impression of the surfaces of the shells. It grows harder by dry exposure, but it is not very good for building. It absorbs much water and scales by freezing. With sufficient heat, it turns to lime, which is good for building, but is too coarse and dark for plastering. The best lime is made from that which has been exposed perhaps for ages to the action of the sun and air; and that kind presents itself in various places, and in large tracts, exhibiting a very singular, craggy appearance, resembling large bones of animals, and other grotesque shapes. H.

[We received by the same mail the letter from which the foregoing extracts is taken, and the Southern Agriculturist containing the article that will be next presented. Both these communications add confirmation to a doctrine which we have before presented to our readers, in the "Supplementary Chapter to the Essay on Calcareous Manures," (No. 2 of Farmers' Register.) What the writer there maintained as deductions from the chemical properties of calcareous earth, sustained by a few experiments and observations, have attracted the attention of several of our correspondents who are able to bring the far better proof of many and well known facts. The foregoing communication is most full on this subject, and therefore is most satisfactory. The selected article on the "Southern Prairies," in addition to its general interest and value, confirms the opinions of our several correspondents, without its author knowing, and therefore having no partiality for the theoretical views which his facts so well sustain. But for the power which calcareous earth possesses of combining with putrescent matter, it can scarcely be doubted that this healthy region would be very different. A soil impenetrable to the rains of winter—rank and putrefying herbage, and the decaying trees of new settlements—bad water, and a hot climate—all would surely combine to make the country unhealthy, but for the safeguard furnished by its remarkable soil.

The statements of our correspondent H. serve to throw light on other peculiarities of the prairie lands. The remarkable absence of trees on the prairies has never been satisfactorily explained. No doubt the cause is not always the same, the soil being far from uniform. But the "bald prairies," here described, are evidently excessively calcareous, and for that reason, less friendly to the growth of timber, than of particular kinds of grasses. Lands containing only a moderate proportion of calcareous matter, when once well cleared of roots by tillage, are less subject to throw up a new growth of trees, than our acid and sterile soils.

We agree entirely with the opinion of our correspondent of the great value of these calcareous soils. But the wonderful power which they possess ought to be judiciously directed, or it may do harm instead of good. These soils want vegetable matter, and that alone is wanting to make the "bald prairies" as fertile as their outskirts, which differ only in being less calcareous. A soil so calcareous as to be unfit to support most plants, is the better suited for all of the clover and pea tribes, which may therefore be most advantageously used for their improvement. Sainfoin, which grows well on the almost pure chalks of Europe, and which cannot live in Virginia, for want of a like soil, may (if climate does not forbid) be equally well nourished by the soft limestone of Alabama. But if these super-calcareous lands are cultivated incessantly until their vegetable matter (already deficient) is exhausted, they will be as sterile as "lousy" Champagne in France, or the desert plains of Egypt; both of these soils being like the bald prairies of Alabama, composed principally of calcareous earth.

However, these speculations are useless, and to the Alabama planter it may appear even ridiculous, to recommend means for increasing, or even preserving the fertility of his now productive lands. This consideration has before restrained the expression of this opinion (when before we presented the views of another correspondent from Alabama,) that that country needs the application of the knowledge of calcareous manures, as much as it possesses the abundant means for that application.—[*Ed. Farm. Reg.*

From the Southern Agriculturist.

ON THE ADVANTAGES AND DISADVANTAGES OF LOCATING A PLANTING INTEREST IN THE SOUTHWESTERN PRAIRIES.

Dear Sir,—To your inquiry about the prairies of the west, and the prospect of a cotton planting interest being located on them advantageously, I reply willingly as to any supposed trouble it may give; my reluctance has arisen, from not being sufficiently acquainted with the country, to speak with the confidence of correctness that ought to make it a guide for any one. I have only seen the prairies of Alabama, in the counties of Montgomery and Lowndes, and have tried to ascertain the composition of the soil, and the effects produced on it by heat, drought, and moisture, so far as connected with their productions. The prairies mean the lime lands, and cover a large portion of the surface of the middle parts of that state, and are divided into the wooded and bald, (or unwooded prairie which are so interspersed, that in one thousand acres together of the most wooded, there will be from one-third to one-fifth of bald prairie, and and in the most bald, a similar proportion of wooded prairie. To speak generally, the prairies are healthy, high, dry, and very undulating, presenting but few levels and no savannahs; the hills bald or unwooded, and covered with a dense growth of grass and weeds, furnishing coarse but excellent pasturage; the sides of the hills, beginning at about one half of their declivities, with the intervening valleys (there called slues) wooded, with the soil of jet black color, which sometimes extends over the whole hill, though very often the bald parts are the color of lime; the crown of many of the hills to the space of half an acre, covered with the pure lime rock in lumps, which, on calcination, makes excellent lime, and in great abundance. The sides of the hills and slues are very properly considered the best lands as to fertility, durableness and exemption from rust. The black soil, and that growth which shows rich land here, is considered the best, and the close or stiff soils, if such a term can properly be applied to lands so very loose, are to be preferred as being more certainly free from the rust, a disease to which cotton is very liable in the bald, and in some kinds of the wooded prairie, after long use.

There are also some prairie swamps, or levels of considerable width, very rich indeed, and very closely covered with a dense growth of canes, (much of them more than thirty feet high) and a

heavy growth of large timber. These lands, as well as some others, often present uniform inequalities over their general levels, resembling the lairs of large animals; the Indians say they are buffalo beds, they are called the hog-bed lands, and are considered the evidence of superior quality. But small portions of these lands have fallen under the stroke of the axe, from their difficulty of clearing, and being liable to be overflowed by the quantity of water which is precipitated on them from the very broken country about them.

This embraces the general character of the surface of the country. The soil presents on and below its surface, oyster and other sea-shells, and the petrified remains of fish, and shows evidently that it was once covered by the ocean. It is for many feet in depth a mass of rotten limestone, in all the various situations in which it has been placed by the chemical action of heat and moisture, and by the decomposed vegetable matter. Those soils are best where there is the most vegetable matter, hence the woodlands that pay for their tenancy in the soil the annual contribution of their leaves, are better than the bald prairies which receive only a scanty contribution from their decayed grasses. The soil is a powder which dries quickly on its surface for an inch or two, and in dry weather is all over in small cracks and looks very dry and husky and unfit for vegetation; but below its surface, two inches, or below where the plough has reached, there is a perpetual moisture. The soil works up under the fingers without grit and very much like putty. From a casual observation of the black light inland swamps of the lower country of this state, I would say, there was much resemblance between them as to appearance, but to appearance only. This quality in the soil causes the prairie to bear drought surprisingly, and good crops of cotton and corn are made on them, in seasons that cut short the product of other lands.

This fineness of soil prevents the percolation of much water through it: hence, in the rains of winter, when but very little evaporation is going on, it makes the worst roads imaginable; so much so, that it is a material deduction from the value of any plantation, that should be more than ten miles from navigation.

This fineness of soil, which prevents its absorption of water to any depth, I think the cause of another mischief. It prevents the gradual feeding of the wells and springs, and in dry summers they go dry to an extent on some few plantations, to require water to be hauled to the people in the fields and in extraordinary years to be hauled to their settlements. It is very common for stock to suffer much for the want of water. So soon as the warmth of spring is felt and evaporation begins, the roads improve surprisingly and become good, and the lands become dry; and when once well ploughed up in the spring, become as light as an ash-heap or as lime itself, which it is, and no subsequent weather ever puts them out of order, except for a day or two from some great rain. You can generally plough the day after a hard rain.

The soil being so loose and light makes it very liable to run its surface off with every rain, and I do not think that horizontal ploughing would save it nor the means usually considered effectual here. I have tried cotton stalks, and bushes up-a-slope without effect, that would have been sufficient here. You cannot ditch with the spade in the prairie, you would make as much and very similar progress in a barrel of pitch. With all this liability of your lands to wash, it will be a long time before you will lose its soil, for it is very deep. I find the opinion entertained by intelligent gentlemen, that the fertility may be restored by the chemical action of the sun and air without putting vegetable matter there. The looseness of soil and want of retention of moisture at the surface during the crop season, makes the prairies the kindest and the easiest land to work. I would prefer to make a crop on them in an ordinarily good year, to preparing for one here.* You can very well cultivate one-fifth more land to the laborer, and gather two thirds more of cotton. The reason why you can gather more is because the cotton pod in that soil and climate matures perfectly, and opens so wide, that the whole contents of the boll come out at a touch of the fingers; when here, it is drawn out at two pulls, and sometimes a third; another reason is, that you commence picking about a fortnight earlier than here, and this time in the long days of August, is equal to one bale of our weights to each laborer, and yet another reason is, that knowing that the amount of the crop depends on the gathering, all other works are so arranged as not to interfere with it.

I think the country more healthy than this, owing in part to its being more high, dry, and broken, and more under the strong influence of the trade winds; but there must be a farther reason, because I have seen local causes enough to produce sickness here, in spite of the general causes of salubrity, that did not produce it there. Families reside with security on their prairie plantations all summer, in the midst of extensive clearing of rich land. I think it must come from some purification of atmosphere arising from the immense quantity of lime on and near the surface of the soil. The other lands in that country under similar circumstances, are not more healthy than here. The waters on the prairie do not corrupt; it is disagreeable to the taste, and both cathartic and diurectic in its effects on a new settler, but after a few weeks he becomes reconciled to its taste, and many prefer it to other good water.

I have now given you a candid, and to the best of my observation, a correct statement of the advantages and disadvantages of a prairie plantation. It is a disagreeable winter country and a pleasant summer country. Your settlement would be more agreeable off the prairie, and the nearer to navigation the better; your cotton once on the river bank, finds a ready and expeditious way to market at a dollar a bale, for all distances above one hundred miles in a direct line from Mobile, Mobile furnishes a good market for its sale, though, perhaps, not equal to that of Charleston. I think it the most conveniently built town for business I have seen, and destined to increase more rapidly than any other in the South. The country is neither well wooded nor watered, and is rather liable to the visits of hurricanes and tornadoes, and your buildings and fences decay sooner than here. I think these objections overbalanced by having a climate more pleasant, from having more air than this, and you are secure in health to your family and slaves, and can more easily make much larger crops, and get them as cheaply to the market of

*In South Carolina.—*Ed. Farm Reg.*

sale. A reasonably good planter on a good plantation ought to average from 1500 to 2000 pounds of clean cotton to the laborer each year, with provisions to raise hogs enough to kill one for each laborer, and some to spare. Your lands will yield you from eight hundred to twelve hundred pounds of seed cotton per acre, and from thirty to forty bushels of corn, and on an improved plantation, will cost you about ten dollars an acre. I think the Prairie, incomparably, the finest corn and small grain upland in the South; and the bald which sometimes rusts the cotton too much for profitable planting, never produces the less corn on that account; if, therefore, in selecting a wooded prairie plantation, you are compelled to take only as much bald prairie with it as may be needed for your corn and small grain crop, and it lays in such a manner that it can be so used, it ought to deduct but little from the value of the place.

It remains for me last to say something about the rust in cotton, but of which I really know nothing. Some suppose it to proceed from the causticness of the lime from its deficiency in vegetable matter, and if so, it will be likely to increase and attack the wooded prairies so soon as successive crops shall have exhausted the vegetable matter in them. This may be postponed for as long a time as most lands would last, by the thrifty mode of listing so generally practised in this state. Others suppose it to arise from the extreme looseness of the soil, and its disposition to granulate rather than pulverize, and not hold in so closely about the small roots of the plant; and that a remedy will be found in not breaking the surface of the beds too near the plant, and not stirring too deep and too near with the plough. We have the same disease here, which has been increasing for the last two years, and is within the last few days showing itself: it neither proceeds from lime nor the deficiency of vegetable matter, for we have none of the former, and it is generally worst in our newest lands, where, of course, there is the most vegetable matter.

This letter has been spun out to a very unreasonable length, and yet I could not be shorter, and give many of the particulars that I believed one would wish to know, that might have thoughts of settling in the West. To change your home and sever the many dear and tender ties that bind you to the friends, and the society in which you have long lived, requires you to reflect well, and be sure that the advantages preponderate much. If you are doing well, you had better remain, is the advice of A PLANTER.

June 28, 1833.

THE FORMER UNHEALTHINESS OF MOBILE, AND THE BENEFICIAL CHANGE CAUSED BY PAVING THE STREETS WITH SHELLS.

[The following letter, as well as the one preceding, was sent to us to serve as materials in the investigation of a very important subject, and not for publication.—We have ventured to disobey the directions of our much valued correspondent, by giving his facts to our readers directly from his own pen. There is nothing wanting in their form, nor is there any other reason whatever, why these letters should not so appear; and upon our confidence in that opinion being entertained by every reader, we place our claim to the pardon of the writer. In witholding the name attached to these letters, which would have still added to their value, we unwillingly comply with our rule of using no correspondent's name, without his consent, however desirable may be its insertion.

We are much gratified to be thus enabled to present important facts from various sources, which concur in supporting the opinions maintained in the *Supplementary Chapter*,&c. But however anxious we may be that these opinions may be established, and be acted on through our southern country, still, *truth*, and not the establishment of a particular theory, is our object—and we request of our readers to aid in the discussion of this subject, by bringing forward any existing reason or facts which may either oppose, or support, the effect of calcareous earth in preventing disease.]—*Ed. Farm. Reg.*

To the Editor of the Farmers' Register.

Mobile, Aug. 28, 1833.

Agreeably to my promise, I proceed to detail to you some particulars about the former situation and present condition of this place, in regard to its health, as connected with the system of shelling the streets, and in support of the position assumed in a "*Supplementary chapter to an Essay on Calcareous Manures*,'—recommending calcareous earths as promotive of health and cleanliness in cities and towns--(p.76, Farmers' Register, No. 2.)

I settled in Mobile in 1819, and have resided here ever since. Mobile is situated at the head of Mobile bay, just where the river of the same name enters it. The plain on which the city stands extends back five miles, and is covered by a pine forest. The region of hilly pine woods then sets in, and affords fine healthy summer retreats. Summer retreats have been formed over the plain, quite from the city to the hill land; and they prove to be healthy. In 1819, Mobile was a small wooden built town—the streets narrow and deep with light sand, except under the bluff, (which was eight to twelve feet above the level of the river,) where the streets were muddy—the tide ebbing and flowing over a margin of marsh from 4 to 600 feet wide, the edge of the marsh next the bluff at all times wet spring land. The rapidly increasing trade of the place, early drew those engaged in it towards the river, and soon covered the flat with store-houses, built on lots so badly filled up, that water stood under all of them, without exception—under some 6 inches, some 1 to 2 feet: and encroachments were made quite into the water, by laying timbers horizontally, to give sufficient elevation. High tides brought in floating logs—marsh grass—and all small substances that were borne on the waves, depositing them in the streets and over the flat. There were only one or two streets at all filled in this flat, and they were very partially done. My first visit was in July, 1819, about the middle of the month: then, it was healthy. About the last of that month, a violent S. E. storm cast an immense quantity of trash and filth over the flat, and a long drought, followed with prevailing north winds, which kept the water of the bay unusually low. The place that summer was visited with the yellow fever, to the extent of a pestilence. In 1820, there was no prevailing epidemic, though the place could not be said to be healthy; perhaps there were some cases of yellow fever. I was ab-

sent three or four months this year on business. In 1821, there was less sickness than the previous year. That year the government sold the site of Fort Charlotte, (now near the centre of the city,) and the citizens thus came into possession of an immense quantity of material for filling up. The fort was a very strong Spanish built one, with walls 20 to 25 feet high, and 15 to 18 feet thick, made of brick and stone, strongly cemented with mortar of shell lime. It had an outer wall and a glacis surrounding the whole, of pure earth. All this, during the latter part of 1821, and in 1822 and 1823 was carted and spread over the flat, together with an immense quantity of earth taken from the back parts of the town, which went very far towards filling up the flats above high water. But this filling was put in the streets and lots, and the foundations of houses already built, were thus made lower than the surrounding land. In 1824, similar improvements were carried on, and up to (and including) that year, there was no epidemic disease; but bilious fever was common, and the place was counted unhealthy.

In 1825, similar improvements went on, and the place was healthy up to the 25th of June, when a wet spell occurred that lasted through the most of July—showery, with intervening hot suns. That year, the old burying ground which is now in the heart of the city, and interments in which had been discontinued the previous year, being the property of the catholic church, was laid off in building lots, and let out on long leases; and many who had friends and relatives buried there, were permitted to disinter them, and remove them to the new grave yard. This operation was carried on during the months of June and July, and the old graves were left open to the influence of the rain and hot sun, to evolve the noxious effluvia that had been engendered by the decomposition of the bodies they had contained. Most of the subjects that were removed were of those who had died in 1819 and subsequently; and I doubt not the miasmata that were exhaled partook of the nature of that which produced the disease of which the subject died—it may be it was identical. This year the yellow fever raged again like a pestilence, and, unless I have already assigned the real cause of the fatal sickness of this year, I am at a loss how to account for it from any local cause that would not have operated as powerfully any previous or subsequent year, anterior to the shelling system. It is to be admitted that the deep, loose, sandy streets, and back yards, would serve as receptacles for an immense amount of animal and vegetable matter, thrown out from kitchens and shops, which, in a dry time, was trodden in and hid, and yet the substance remain to be operated on by heat and moisture: and that the effluvia thus created would co-operate with the cause before assigned. There is another collateral cause worthy of notice, that exposed many a poor creature to the influences of the general causes of sickness, and no doubt accelerated its progress. That year is remembered as the "gambling year." The legislature, by careless legislation, in a very laudable zeal to suppress that pernicious vice, by a sweeping clause so framed a law as that it admitted a construction to license gambling, instead of suppressing it. Many gambling houses were opened under a $1000 license, as public as taverns, and such scenes of dissipation have rarely been witnessed in any country. Exposure to night air, loss of sleep, loss of fortune, loss of character, drunkenness and debauchery, (all fruitful exciting causes,) no doubt had their full effect in swelling the list of mortality.

In 1826 and 1827, many brick buildings were in progress, and the sites of them exposed by removal of the old wood buildings. This, with the general absence of cleanliness produced by the capacity of sandy streets to retain filth, as remarked above, caused sickness these two years. There were several cases of yellow fever in both years; but nothing to be compared with 1825. In October, 1827, a fire occurred that swept the whole business part of the town, and hardly left a house standing, wood or brick, in all the flat below the bluff. The legislature, at the next session, which commenced soon afterwards, passed a law prohibiting the building of any other than fire-proof buildings within certain limits that included the business part of the town; and here begins a new era in the history of Mobile. In 1826, a brother of mine, who is a physician, then residing here, urged the importance of improving the health of the city, (which he deemed perfectly practicable,) both through the medium of the press, and in conversations, upon all suitable occasions. Nothing was done while he resided here; but his opinions took root, and were finally acted on. The shelling the streets was the prominent means, with various details regarding police and individual attention to cleanliness of yards, &c. Since 1827, the improvements in filling up, building, graduating, and shelling the streets, and paving the side-walks, have gone on so rapidly as to defy details; but the effect on the comfort and health of the place is abundantly obvious. In 1822, the first brick tenement was erected, and most of those that were afterwards built prior to 1827, were then burnt down. Now there are between 300 and 400. One entire new street in front has been made, having encroached on the river to the depth of 6 or 8 feet of water: and from thence back to the bluff, the ground is well filled up—every street shelled—all the alleys—many of the yards—all the public warehouse yards and the tavern yards, are shelled—several of the streets are shelled for half a mile back, and one that meets a leading road is shelled over a mile—many of the cross streets are shelled, and ere long, every street in the city will be shelled—it is, indeed, the settled policy, and without any *constitutional bar* to its exercise. Mobile has been uniformly healthy since 1827—and I have been particular in my details, that you might the better judge whether it resulted from the shelling system. You will, no doubt, give due weight to the circumstances of all the flat being well filled and mostly covered with fine brick buildings. Last fall and this summer while the cholera raged so fatally in New-Orleans Mobile was visited with very few cases, and they excited little or no alarm. In the first instance, 9 or 10 cases were reported: the deaths were 4 or 5. In the last instance, no public reports were deemed necessary, and I cannot say, with any precision, how many cases occurred. I heard of some few deaths among the blacks—and the city continues perfectly healthy up to this time. The shells that are used are cockle, or sea muscle; as some call them. They are the size of a half dollar, to that of a dollar, of the form of a clam shell, and they are pretty thick and solid. They abound about the shores of the bay, and are contained in large banks

upon the marsh islands opposite and above the city; perhaps having been the *nuclei* upon which those islands were formed. The shells are brought in large lighters, as your correspondent 'M.' informs you. [Farm. Reg. No. 3, p. 152.] When the street is graduated after the manner of turnpiking, the shells are carted and spread over the street to the depth of 4 or 5 inches—the spreading hardly forms a moment's obstruction to the passage along the street: as soon as they are spread, which is done by scattering them with a spade, carriages and horses pass over them, and they very soon form a crust, so well cemented as to be difficult to dig up with a pickaxe. They wear out, by very constant use on the most frequented streets, but, by a little attention to *breaks* and thin places, when a street is once shelled, it is very easily kept in repair.

I have been informed the shelling system has been attempted in New-Orleans; but it will not answer for that place, owing to the ground being so much saturated with water as not to sustain the shells. I learn that it is difficult to make the deepest paving stand well, from that cause. If it will answer, I doubt not that New-Orleans would find its account in covering every inch of its whole area. I have gone through all the facts and circumstances that occurred to me as having any bearing on the subject. They are intended for your own information, and if they throw any additional evidence in support of your opinions, that will pay you for their perusal, the end I had in view will be attained. H.

For the Farmers' Register.

WOODEN RAILROADS.

Recent publications in the newspapers have attracted some attention to a plan for cheap wooden railways, for which a patent right was taken by Mr. John Hartman of Scottsville, who supposed himself to be the first discoverer. But (though this gentleman is not therefore the less entitled to applause as an inventor,) it has since appeared that a prior patent had been taken for a similar plan, by Mr. John Williams, an engineer of Ohio. The controversy between them has ended in an amicable adjustment of their conflicting claims.

The plan is described as follows in Mr. Williams' *specification*, on which his patent was granted, and in his letter to the Rail Road Journal.

"I lay two continuous lines of timber, or other suitable material, lengthwise on said road, such a distance apart as to form tracks for the wheels of such vehicles as are in general use upon the road so improved. I furrow, gutter, or groove one of these tracks, in order to receive and guide the wheel or wheels of one side of the carriage passing thereon. These grooves or gutters may be made in the timber or other material—*or they may be formed by attaching cheeks or sides to a plain surface.*

"————These tracks may be bedded, or laid in, or upon stone, gravel, clay, or any material of which the surface of the road is formed, and the pieces of which they are constructed may be connected by dowels or clamps, or laid upon *transverse blocks, or cross-pieces, which may or may not extend from one to the other.*

"————Where there is much travelling upon a road so improved, I lay two sets, or four continuous lines of tracks, one set for the going and one for the returning carriages. I am aware that some of the advantages of such a track road may be gained by laying timber as above, by furrowing, guttering, or rebating both tracks, to guide the wheels, but I prefer to gutter or groove one only."

'As to my preference,' says Mr. Williams, 'for grooving or guttering one track only, it originated in my knowing that a guide for the wheels of one side of a wagon or carriage will in all cases answer as well as a guide for the wheels of each side; besides which, there is a difference of about eight inches in the span of axles as constructed in different states and places. This circumstance influenced me in favor of furrowing or guttering one track only, as by the other track being left plain, vehicles cannot be injured by binding in the track. Again, in turning out, when one track alone is guttered, one half the labor only is necessary to overcome the obstacle. And further, by carriages entering upon the tracks, one only will be injured, and the jolts be less, where one gutter alone is dropped into. Add to all this, that one gutter will only cost half the amount of two, and I imagine the public will sanction the preference I have given.'

As to tying the tracks together in the manner of railroad sills of wood, agreeably to Mr. Hartman's plan, and which is recognized in my patent, I shall not recommend it until experiment shall prove the necessity of it, not only on account of its expensiveness, but because almost every man's experience will convince him that at those intersections of timber against timber, decay will commence. At present I believe that timber well bedded in the road formation will be still enough, and last longer, much longer, than for timber to be against timber. Where timbers are spliced, dowels or clamps may be necessary to join them, and where the substratum is likely to be soft, cross-blocks, of such a size as will support the joint, will be necessary.

In respect to forming the groove or gutter in the stick or out of the solid, I prefer it for similar reasons, as I am certain that the timber will be less likely to decay than where, by "attaching cheeks or sides to a plain surface," furrows or gutters are formed. All holes bored in timber, whether filled with spikes or trenails, and all joints or cracks in timber, should be carefully avoided if we attend to the durability of it, particularly if exposed to the weather. And further, gutters or guides formed out of the solid will be less liable to derangement than those formed of "attached cheeks or sides," and I question if they will cost more, as laid timber may be ploughed as well as land, and in much the same way, and grooved as boards are grooved, and that by any sufficient motive power."

The foregoing description gives a sufficiently accurate idea of the plan. It appears from an act of the legislature of Ohio, passed January, 1832, that part of the Cincinnati, Columbus and Wooster turnpike, is to be constructed on Mr. Williams' plan; and Mr. Hartman has already finished in this manner a short distance upon the Staunton turnpike route, which, if this experiment should be satisfactory, is to be made entirely a wooden railway. These facts are enough to prove that the plan is considered good and economical for roads intended to be permanent, and which are expected to be much travelled. This may however be incorrect, and still the wooden railway prove a most

valuable invention. A railway that will be enough used to be profitable as permanent *stock*, ought to be constructed in the best manner—and economy would direct the most perfect levelling of the track, that the location and circumstances permit, and the use of iron, rather than the wasting and rotting tracks of wood alone. But whenever a railway is needed for temporary purposes, or even permanently for common wheel carriages, over a level route, where timber is cheap and plenty—under any or all of those circumstances, the wooden tracks will probably be found so useful, as hereafter to double the extension of the lines of railways. I will offer some examples of purposes for which this plan seems to be admirably suited.

The country below the falls of the rivers is almost entirely without hills, or land rising above the general level. There is plenty of broken, or (as it is called) hilly surface; but the unevenness is caused by parts sinking below the general level, as if deepened by rivers and smaller streams. Hence, in the most broken parts of our low country, the summits of the ridges which separate different streams are almost level, and by following them, a route of 20 miles may sometimes be found, which would need very little grading, to form almost a level road. It is true that these ridges are the poorest land, and therefore the least fitted to furnish agricultural produce for transportation; but more fertile lands, on slopes and bottoms, are generally not distant from the ridge, and extend the whole distance on both its sides. The ridges, from their poverty, are still generally in forest; and their distance from market has prevented much even of the best timber being removed. For these reasons, the materials for timber railways would be there the most abundant and cheap; and the railway, when completed, would serve to carry to market the forest growth of the ridge, as well as the crops of the adjacent cultivated lands. If a road of this kind was so located, it might be used most profitably for a few years, even if it should be not worth keeping up longer than the first timbers would last.

The Petersburg Railroad crosses the course of the rivers, and of course all the intervening ridges. I am not particularly acquainted with this country, except from the map, and a knowledge of the general features of the country, as referred to above. But judging from these imperfect lights, it would appear, that branch railroads of timber might be advantageously constructed on all these ridges, so as to be connected with the main route. Staves and other kinds of lumber are now brought to Petersburg by the railroad; and if these branches were constructed, every valuable timber tree within twenty miles of the present road, as well as every bushel of surplus grain, might be sent with profit to that or some other market. The same advantages (if not greater) will follow the adoption of this plan in connexion with the Portsmouth and Roanoke railroad, when that work shall be completed. J. B.

For the Farmers' Register.

NOTES OF A RUSTIC.

In early excursions through western Virginia, I was not more astonished by the grandeur of the mountainous regions than by the immensity of the forests that covered them.

Yet, I was informed by some of the octogenarian inhabitants, whose longevity enabled them to look back over nearly a century of time, that when they first visited those regions, extensive tracts of land, often stretching as far as the eye could reach, exhibited scarcely a solitary tree.

Even now many of our forests present the appearance rather of youth than old age; while in other places trees of greater magnitude are found. Magnificent poplars and sycamores, which seem as if they might have stood the blasts of a thousand winters, often meet the eye of the traveller. Who that has traversed the rich valleys of Greenbrier, and the Kanawha; who that has seen the "*Fraxinus in sylvis*," or the "*Abies in montibus altis*," can be insensible to the beauties of our forests, or cease to wonder that our native ornamental trees are allowed to languish and die in obscurity, while our domicils are crowded with detestable exotics.

In the remarks which I propose to make on this subject, without regard to botanical arrangement, I shall divide our trees into two classes—the *ornamental* and the *useful*.

The latter class is better known, because applicable to so many purposes of life, as in the construction of houses and ships, and fences and agricultural implements, and mechanical work of almost every kind—but the former are, though often neglected, scarcely less important in adding to the health, and comfort, and beauty, of our domestic habitations. And yet, what a deficiency of taste, if not of common sense, is displayed upon this subject?

The *Lombardy poplar* seems to be the favorite tree in adorning our yards and dwellings; and yet, with the exception of the *boa upas* of Java, I doubt whether the vegetable world could afford another so ill adapted for the purpose; it supplies us with scarcely any shade—its cortical appearance is rough and ugly, while the immense ramification of its roots running near the surface of the ground and descending to the bottoms of our deepest wells, destroy the green velvet turf of our yards and the salubrity of our waters. There is no depth to which they will not descend—even the walls of our cellars cannot exclude their unwelcome intrusion.

This tree is also peculiarly infected by the caterpillar, and other members of the entomological family.

I have often wished that this miserable exotic could be banished to its native shores, to make room for any other tree, except

The *Aspen*, (populus tremula,) which is a member of the same family, inheriting all the bad qualities of the former. These trees, united with the poisonous *pride of China*, are the *ornaments* of our domestic habitations. Even the public square of our capitol, on which so much money and so little taste have been expended, is set off by these ill favored intruders. Our legislators, so filled with political wisdom, so erudite in the great matters of public concern, seem to have but little room left for common sense, and none at all for the pleasures of intellectual taste. It never entered into their heads that the magnificent daughters of our own forests could compare with trees imported from foreign shores—or that a comfortable shade, or beautiful foliage and flowers, were at all important in ornamental trees.

In the class of ornamental trees, I shall give the first place to the *horse chesnut*, (Aesculus Hippocastanum.) The smoothness of its bark, the den-

sity of its shade—its early and beautiful bright green foliage, and the profusion of rich and delicate flowers with which, in its proper season, it is covered, place it in the first rank of ornamental trees. Its perfect freedom from all insects, as well as its harmlessness to the subjacent vegetation, also give it a preference to most of our flowering trees.

The growth of this tree is slow, and it flowers late; but, yet, the delay is amply compensated by the equisite beauty of its bloom.

This tree is found among our western mountains where it is best known by the name of Buckeye. It may be also procured from the nurseries of Long Island, and generally from the gardens of our northern arborists.

Next in the order of beauty, is the *Cucumber Tree*, (Magnolia Acuminata,) which is frequently found in the western districts of Virginia, after passing the first and second ridges in travelling westward.

This tree, at a distance, seems to have the beautiful green of its leaves intermingled with roses—which, on a nearer approach, are discovered to be the fruit or cucumber, exhibiting its reddish tints, partly hid in the foliage. Its fruit is highly esteemed as an aromatic bitter, and the vigor and luxuriance of the youthful tree are always admired by those who have traversed our western woods. It abounds in the neighborhood of the Warm Springs, and I have discovered it in the Valley, between the North Mountain and Blue Ridge.

The *Poplar*, or *Tulip Tree*, (liriodendron tulipifera,) is one of our most majestic forest trees. It belongs to the Magnolia family, and of diciduous trees has the tallest and most uniform trunk. In the rich valleys of western Virginia it towers above the other natives of the forest, while its delicate flowers seem to hang from the clouds.

Hic candida populus
Imminet, et lentæ texunt umbracula vites.

It is not my intention now to do more than merely note a few of our fairest trees, so as to call the attention of those who wish to add to the comfort and pleasure of domestic life to the subject.

I would not willingly thrust my trees in the way of more useful matter, with which the Register abounds, but I may perhaps resume the subject in a future number. W.

The bad taste which W. denounces, is no where so conspicuous as on our Capitol Square, or so destructive of beauty and grandeur. From this place, almost every forest tree has been excluded, and Aspens, Lombardy poplars, Pride of China, &c. have been planted in straight lines, crossing each other at right angles, with as much regularity, and as little taste, as is displayed in the arrangement of the cabbages in a kitchen garden. But as no more agricultural knowledge was exercised by the agents of government to enable the barren soil to support the growth of trees, than there was of taste in their selection and arrangement, it is to be hoped, that most of these miserable exotics may continue to languish and die, and that the square may yet be shaded and decorated by trees worthy of the place—which is even now beautiful in defiance of the deforming taste of the agents of the state, kept in active operation at the public expense. [*Ed. Farm. Reg.*

REPLY TO "J. E. H."—CULTURE AND PRODUCTS OF LOWER VIRGINIA.

To the Editor of the Farmers' Register.

My communication which appeared in your August number, was intended to correct error, not to provoke controversy. I will not assert that my purpose would have been inferred from its contents; because the vindication it has drawn from the pen of your correspondent, "J. E. H." would seem to contradict me if I should. Nor is it necessary that I should deny that I was "in an ill-humor," when I wrote. But, however, this may be, I will endeavor to avoid any appearance of such a spirit now. I know that I have no taste for controversy; and I willingly concede that I have no talent for it. Were it otherwise, the disclosure of the name of your correspondent, (for I will not affect ignorance of the initials,) would neutralize any asperity that I could feel an inclination to indulge. Further, I would have no objection to revealing *my* name to "J. E. H.;" but I suspect the public have no wish to know it, and if they have, I am not disposed to furnish the information by abandoning the *incognito* of "MOCKJACK."

I propose now to sustain the position of my former article by a kind of reasoning that I avoided in that. You will remember, that my whole argument consisted of arithmetical deductions from statistics. My object in adopting that system, was that the reasoning, as far as it went, might be beyond the reach of criticism. How far it went, is another question. "J. E. H." thinks it worth nothing—I am content to let it remain as I have left it.

"The tide-water, or eastern section, is in *general* low, level, sandy and unproductive, and *parts of it* exhibit almost as desolate an aspect as the pine barrens of Jersey." This is the statement in the "General Description," to which I objected, and which I propose now to consider. I suppose that my understanding of this sentence is the right one, and that it is wasting time to analyze the words that compose it. I understand it to mean, in connection with the other parts of the General Description, that the tide-water country is far behind every other portion of the state in fertility. If it does not mean this, I am not inclined to carry this discussion any farther. But supposing that its meaning is correctly stated, my purpose is to show your readers, and if I can, to convince the author, that he has too hastily adopted the opinions of others. I do not understand him as relying on any observation of the country that he has personally made. From some little that I know of him, I would infer that he has had no opportunity of accurately observing it; and that he is not sufficiently skilled in judging the characters of soils, to feel any confidence in his own opinion, even with the advantage of ocular examination—that he is not, and never was, a *farmer*.

The appearance of the tide-water country, to one who travels on the highways, is far from prepossessing. The great quantity of sand which is incorporated in almost every portion of the country below the falls, gives to the surface an appearance of sterility. Sandy lands do not produce *grass* like those of a stiffer character. The stranger, who has been accustomed to judge of the soil, by the covering that it bears, concludes at once that the country which he sees from the windows of the stage

coach, is as barren as an African desert. Add to this the fact that the public roads are very generally made through the poorest parts of our country, along the ridges that form the back-bones of the peninsulas, into which it is divided by the rivers, and the mistakes of travellers are readily explained. Even in the richest portions of our country, where the sand is abundant, every particle of soil is removed from the beaten tracks of the roads, and carried off in dust, or washed away by showers. It is a great blunder to suppose that sandy lands are necessarily poor. Except some few farms on the low grounds of the James and Rappahannock rivers, I doubt if there is one acre of fertile land in the whole tide-water region that is not essentially sandy. And strange as the statement may appear to one unacquainted with it, it is nevertheless true, that in all our lands, except those that are recently alluvial, sand is absolutely necessary to give them value. Let me explain: Experiments have been fairly made, and they fully prove that no land on tide-water will bear cultivation frequently without its presence. It is usual in the clay soils of upper Virginia, to divide a farm into four, five, or six fields, and to cultivate them then in rotation; using them, when fallow, for pastures, and if sufficiently fertile, for cutting grass. But a very sandy piece of land may be cultivated every year in a substantial crop; and, if well managed, improve by the system. I will speak of this presently.

Mr. Gilmer and the author of the "Prize Essay," are cited to sustain the correctness of the views of the author of the General Description. What opportunities the gentleman first named may have had for a personal examination, I have not learned. My present means of reference do not allow me even to see the work in which his essay is incorporated. But if he has never seen the country, or has seen it on the stage roads only, his authority as a *witness* is worth nothing. To the authority of the other, perhaps my objection is almost as strong. I am aware that he resides within the region he proposes to describe. But let it be borne in mind, that his is the poorest part of it, in the vicinity of the line that divides it from the middle section—where nature seems, by way of offset to the great commercial advantages bestowed on the region of the falls, to have inflicted her direst sterility. Immediately below and above these (except in the narrow strips of river low-grounds,) the earth appears to me almost incapable of improvement. Richmond itself stands on a range of hills that cannot be fertilized. Those who possess lands about it that are worth cultivation, have carried the soil from other places and spread it on the surface. That the description given by this gentleman of the country which he inhabits is true, I shall not therefore question; but I object to his making that a *general* description of lower Virginia, which is true of a very small portion only.

Some questions are asked by "J. E. H." and I have no disposition to evade them: "Why is it that the stream of emigration has flowed so unceasingly from that quarter (tide-water,) to other regions?—that the march of its population is in a declining ratio when compared with other districts of the state?" The answer to these is obvious. The *cheapness* of rich land in the west and south has carried off the population. This might suffice: but another cause, one of a moral character, has been equally efficient. Slaves form the laboring population of the country; and the farmer who for the want of them, cultivates his land with his own hands, feels that his occupation is degrading. He removes, therefore, to a part of the world where he may labor without subjecting himself to mortification. This species of pride has banished a large portion of those who have emigrated.

That the proprietors of rich river margins sometimes complain, is undoubtedly true. But I have never known that they complain more than other people. The merchants complain of dullness in business—the lawyers of the scarcity of suits—the physicians of the healthiness of a season—and the undertakers and grave diggers of the paucity of deaths. The farmers that I have known are generally dissatisfied with the weather, and sometimes with the overseers; but I have rarely known one to acknowledge that his farm was unproductive. And when such a complaint is made, I always suspect that the farmer is more in fault than his farm. The truth is, that the inhabitants of lower Virginia are the most extravagant people in their habits that are any where to be found. Their revenues, even with the careless management that almost every where prevails in this region, would be very sufficient for more moderate wants. A reform in this particular is more wanted than in any other.

It is to be regretted that no means of ascertaining our exports exist. Not an article of produce which the farmers of tidewater carry to market, is subjected to any inspection by which its quantity is recorded. I have no disposition to hazard any conjecture on the subject. But so far as my knowledge is certain, as depending on facts that are notorious, I will venture to give it. This will suffice for my purpose.

Indian corn may be considered our principal crop, because it is a large one in almost every portion of our country. Virginia corn is known in every market from Newport to Savannah, and in the West Indies, Buenos Ayres and Madeira; besides a considerable quantity that is carried to the upper country to supply the deficiency on the wheat and tobacco farms. How much the last item amounts to cannot be ascertained. On the James river canal alone, 17,115 bushels passed up in 1832.* With the exception, *perhaps*, of a small portion of country above the falls of Roanoke, every bushel that leaves Virginia is made on tidewater. "Virginia wheat," too, invariably forms an item in the prices current of Baltimore and New York. Every bushel of it is produced on tidewater. That which is raised above the falls, and a large quantity from below, are converted into flour, and pass the inspections established in the different towns. Oats also are carried in very large quantities to Richmond and the northern cities, where they are quoted as "southern oats." These are the principal crops. In addition to them may be mentioned some that are less important, from which considerable revenues are derived by those who cultivate them. Cotton, castor oil, beans, peach brandy, peas and sweet potatoes, are produced in great abundance in some limited districts, chiefly for the northern markets.

* Taken from the books of the toll keeper. It is proper to state, that the article "corn." includes meal, shorts and bran. The two last, however, form a very small portion of the aggregate quantity.

As connected with my main subject, I beg leave to offer you a very general synopsis of the different systems of farming that prevail in lower Virginia.

It is usual with us to distinguish the different systems by the number of fields into which a farm is divided. These always, I believe, have reference to the corn crop. Their numbers vary from one to five. The first and last are indeed seldom to be found. But they have been tried sufficiently to test their merits, and are known to possess some advantages. To explain the one field plan, it is necessary to premise, that in far the larger portion of our region, the land is ploughed in ridges, averaging about five feet. This is pursued principally as a means of saving labor. A plough that clears ten inches, and that may in the greater part of our country be drawn by 2 small horses or mules, will entirely reverse one of these ridges at four furrows. But to get a crop of corn from a field every year, the rows must be widened to about seven feet. The corn is planted along the top of the ridge about the first of April. As soon as the spring is sufficiently advanced usually about the first of May, a part of the earth is thrown back into the alley by carrying the plough through, once each way. On the small ridge formed by this operation, peas of the most active growth are planted at distances of two or three feet apart. They are gathered as they ripen, until the frost puts an end to their vegetation, when the vines are buried by throwing two furrows on them with a large plough. In the following spring the corn is planted on this ridge, and the decaying peas furnish an excellent manure. Land thus cultivated, has been found to double its production in twenty years. None but very sandy soils will bear it. And the great objections to it are, that the cattle are badly provided for both in pasturage and provender.

The two field system is much practised on the Eastern Shore of the Chesapeake, and it is to be found occasionally on the western. This too, requires a very sandy soil. The farm is divided into two equal fields, and cultivated alternately in corn and wheat, or oats. But under this system, as under that which I have described, some other crop is necessary. Nature furnishes one. When the small grain is taken off at harvest, the land is left handsomely covered with a growth, which, from the small island on which it was first discovered, is called MAGADABA BEAN. It is an annual growth, with numerous leaves set on a principal stem, like the leaves of the locust, but not more than one-fourth that size. It branches considerably, and from the height of six inches, until its growth is completed it displays an abundance of bright yellow blossoms, shaped like those of a garden pea. The pods are black, and resemble in form those of the patridge pea, but are considerably larger.—This wild bean continues to grow in the burning heats of July and August, never losing its freshness, until the cold weather of October overtakes it. It then decays, and before the first of March scarcely a vestige of it is visible. When this bean, which will grow in any very dry and sandy soil, and with management that insures the return of the offal of the crops in the form of manure, the two field system is ascertained to be an improver of the farms where it is practised. The want of proper and sufficient pasturage for cattle is the evil of this also. The land must never be used for pas- [illegible] summer months.

The three field plan is soon described: Corn—wheat, barley, or oats—pasturage. Land will not improve by this course of cultivation without other sources of manure than those furnished by the offal of the crops. Those who use marl largely, find it a better system than either before described; because they have ground on which they can bring it all the year, and the cattle have a third of the farm for grazing.

The four field plan is still better, particularly when it is used as a means of increasing the wheat crop. This succession is wheat, corn, wheat—pasture. Thus two of the fields are in small grain, one in corn, and one in pasture; or, according to another practice, corn, wheat, clover—pasture. With very good management, a farmer may manure his whole corn field under the four field system.

The five field plan is that practised principally by the best farmers in the middle country, and needs no description.

It must be acknowledged that the two first plans have considerable advantages where the soil will bear them. If a certain number of acres will produce a given crop every year, the land must be more valuable than that of equal productiveness, which requires rest. And these systems (or one or two fields) require much less fencing than others; a single enclosure protects every thing.

I have spoken of the principal crops. There are some others very valuable in limited districts. Of the cotton in the country about Petersburg, and in some detached places elsewhere, it is unnecessary to say more, than that this is a crop of which land never *tires*. The same field is cultivated every year. So too, of sweet potatoes, an important crop on the Eastern Shore. To form an estimate of its value, it will be sufficient to state, that land which may be worth $15 or $20 per acre is cultivated in potatoes. The hills are made, perhaps, three feet apart each way. It is usual for the owners to sell them before they are dug, to be carried to the Philadelphia and New York markets; and the price is a cent per hill. An acre, by calculation, contains 4840 hills, which thus produce $48 40 without the trouble of saving the crop. They require about as much cultivation as cotton. Peach brandy too, is found to be a very profitable article for market, and is made principally on the sandy fields of the Eastern Shore, and by some farmers on the south side of James River. In the former place I understand that the orchards are sometimes more than a hundred acres in extent. Other crops are raised on the same land by placing the rows of trees at a good distance apart. The castor bean is cultivated in considerable quantities in Elizabeth City and York, where some fortunes have been made by it. Its cultivation has been partially adopted by the farmers in some other countries of the salt water region.

I have thus, Mr. Editor, given you an essay on the resources and farming of lower Virginia. On the first, I acknowledge I have written imperfectly; because certainty cannot be obtained in the absence of the police regulations which exist in some other countries. And on the second, I have undertaken no more than a synopsis; and this only as conducing to the main purpose of my communication. I think I have kept my promise of avoiding the spirit of controversy—if I have not, it is because I am not capable of judging the demerits of my own composition.

MOCKJACK.

DUCKS AND TURKEYS.

To the Editor of the Farmers' Register.

——, *North Carolina, Aug. 20th.*

There appeared some time ago in the "Southern Agriculturist," a communication on the subject of raising ducks. To the author of that communication I acknowledge myself much indebted: and embrace this opportunity of bearing testimony to the utility of his plans and suggestions. I have no hesitation in saying that any housekeeper who will carefully follow his directions, will soon find his poultry yard abundantly supplied with the *quacking gentry.*

It has occurred to me that a similar dissertation on the most successful method of raising turkeys would be a valuable present to many of your readers.

Of the young turkeys which are hatched, not more, perhaps, than one-fourth survive the diseases and disasters incident to the first months of their existence. This is rather a discouraging circumstance, even to those who do not count their chickens before they are hatched.

If, therefore, you could induce one or more of your correspondents who may have skill touching this matter, to give to the public the result of their experience and observation, I am persuaded that you might safely calculate on the thanks of the whole turkey-raising and turkey-eating community.

SPINSTER.

We hope that some one or more of the ladies who honor the Farmers' Register with their attention, will comply with the request of a "Spinster." The article referred to on rearing ducks, will be republished in our next No. if a copy can be procured —*Ed. Far. Reg.*

LUCERNE.

To the Editor of the Farmers' Register.

Powhatan Hill, King George Co.
15th September, 1833.

A correspondent inquires in the fourth number of "The Farmers' Register," whether lucerne has succeeded in Virginia. I have tried it successfully on a small scale, and have seen it tried with equal or greater success in Richmond county, at Mount Airy. In both cases, it was sown both in drills and broadcast; and both cases proved the superior efficacy of sowing in drills. The superiority of this mode of sowing, is, I think, more than equivalent to the increased labor of cultivation. I sowed it in drills about 15 inches apart, so that the hoe could work well between each row; and between every three rows, I left a space of two feet, so as to enable me to clean and work it thoroughly. On a large scale, I would sow it in drills sufficiently wide to admit the cultivation of it by a small one-horse plough.

Lucerne, called by the Spaniards *Alfalfa*, is cultivated most successfully in Mexico and Colombia, and constitutes the chief food of the horses and mules in those countries. Indeed, they require and often get nothing but lucerne in a green state. There it is cultivated in drills about two feet wide: as it grows, the earth is drawn to it in a high ridge. It is frequently irrigated, and when it is well cultivated, grows from two to three feet high. Lucerne demands a good deep soil; its root penetrates at least three feet into the stiff clay which forms the substratum of the ground where I sowed. The depth to which the root goes, renders it liable to be less affected by drought than any of the artificial grasses—but frequent irrigation tends in a wonderful degree to improve it. It may be cut in the spring three or four weeks earlier than red clover.

ED. F. TAYLOE.

SKETCH OF THE LIFE AND PUBLIC SERVICES OF SIR JOHN SINCLAIR.

[Communicated for publication in the Farmers' Register.]

We have received from a correspondent of Sir John Sinclair, a copy of a recent communication from that benefactor to agriculture and to mankind, which though printed, as it states, "for the perusal of a few particular friends," has not yet been published. The language of panegyric which it applies to that distinguished man, however well it may be deserved, was probably the cause that prevented his giving it to the public: but the operation of this restraint does not extend to others, and we extract for publication a portion which gives a sketch of the various works and public services of Sinclair. We propose hereafter to give somewhat similar notices of others, both European and American, who have rendered the most distinguished services to agriculture. Of all who have thus labored for their country, and for the world, not one has had opportunities and advantages equal to the subject of the following memoir, and no one has better used the means and advantages he possessed.

The whole communication before us consists of a review, translated from the German of Baron VARNHAGEN VON ENSE, of one of Sinclair's latest works, together with some correspondence thereon. As the greater part of the piece has but little relation to agriculture, we shall confine our extract to the following memoir. The review was published in its original language in the *Berlin Critical Review*, in 1831.

The contemplation of such an excellent and beloved character as the author of this work, communicating the most remarkable events of his life, necessarily awakens admiration and delight. Others may have been induced to publish similar accounts, because they have lived in an age of great events,—or been engaged in unusual adventures,—or experienced peculiar developements of their intellectual powers; but on the present occasion, we are presented with the spectacle of a venerable old man, who, surrounded by his own achievements, cheerfully, yet thoughtfully, submits them to general inspection, and recalls with satisfaction, the memory of the exertions which have enabled him to accomplish so much, detailing, at the same time, with natural complacency, the personal marks of esteem which reflect a lustre upon his exertions.

He presents us with the model of an excelling and productive mind, filling up the whole sphere of its earthly destination; whether we contemplate him as an individual,—as the head of a family,—as a private member of the community,—as a representative of the people,—as sharing in the councils of his sovereign,—as augmenting the military strength of his country, or defending its naval

power,—as promoting its agricultural industry,—or as an author, extending his influence over a still wider circle, and by his advice and co-operation, advancing the march of civilization both at home and in foreign countries. His self-selected sphere of action is so happily chosen, that while his industry benefits the whole world, every action has at the same time an immediate bearing, on the good of his country, of his native districts, of his private estate, of his own family, and of his individual usefulness. Firmly poised upon a central point, he animates at once all these concentric circles.

Sir John Sinclair was born of distinguished and wealthy parents in the most northerly district of Scotland, at Thurso Castle, in the county of Caithness, in the year 1754. His mother, (a sister of the Earl of Sutherland,) took upon herself, after the death of her husband, the management of his estates, and the care of superintending the education of her orphan family. Sir John received the first rudiments of learning at the high school of Edinburgh, and afterwards prosecuted his studies at the Universities of that city, of Glasgow, and of Oxford, carefully improving the opportunities which these seminaries afforded him, of increasing both his knowledge and his friendships. In the year 1775, he was called to the Scottish Bar, chiefly with the view of obtaining a more intimate practical acquaintance with the laws of his native land. His attention, however, had been early directed to the improvement of his paternal estate. From this limited sphere, his mind extended itself, first to the state of the landed interest in the shire of Caithness, and soon discovering that essential amelioration could only be attained by united exertions, in wider combinations, he succeeded in awakening a kindred spirit in the neighboring counties. Roads and bridges were constructed, to facilitate the intercourse of a scattered population, villages and towns were called into existence, to serve as depots of merchandise,—manufactories were erected,—and harbors were formed and improved. Above all, agriculture and pasturage, in particular the management of sheep, were encouraged: obsolete and ineffective systems of husbandry were made to give way to those which were more productive, and in all these respects, Caithness may now compete with the best cultivated districts in the kingdom. Thriving towns, also, (those of Wick and Thurso,) have grown up on the site of paltry villages, and the fisheries on the coast have become, perhaps, the most important of any in the three kingdoms.*

It would have been an endless task for the author of the work now before us, to have recounted how these labors were emulated in other counties in Scotland. It may be sufficient to state that twenty out of thirty-three counties of Scotland, on different occasions, have thanked him publicly for the obligations he had conferred upon them, by promoting the improvement of the country. His labors afterwards received a new impulse, by being extended to England ; from which wider circle, however, his patriotism uniformly instigates him to keep in view the interests of his native country.

* In carrying on these improvements, the author recognizes the important aid he received from the lord lieutenant and the sheriff of his native county.

In his six and twentieth year, he was unanimously elected, by the freeholders of Caithness, their representative in Parliament, a situation which he filled for about thirty years, in the course of which he obtained the sanction of Parliament for the establishment of a Board of Agriculture, of which he was appointed to fill the presidential chair, a situation by which he was enabled greatly to extend the sphere of his activity. He originated several most important undertakings: and notwithstanding the most vexatious opposition, he was enabled, not only to influence the condition of Great Britain and Ireland, but the progress of foreign nations, even beyond the boundaries of Europe. The numerous diplomas which flowed in upon him from all quarters, proved the universal consciousness of his merits. Some of his plans, that for instance in the year 1796, for the cultivation of waste lands, although approved of by the Commons, was rejected by the House of Lords; but the impulse being once given, his object gradually became successful.

This inestimable man, however, did not limit his exertions to these matters, but, as a member of Parliament, he took a part in every important discussion that occurred in that honorable assembly. His principles led him in general, to support the administration of Mr. Pitt, whose personal friend he was. Every question of finance, of trade, navigation, and legislation, whether regarding the mother country or the colonies,—every question of peace or war, received his most serious consideration ; and yet, amid this multiplicity of objects, he never once lost sight of that great cause which lay nearest his heart, the promotion of the true interests of mankind, as individuals and as citizens. When we learn that such a man was for a time opposed to the suppression of the slave trade, we may be enabled to appreciate the difficulties with which the involved relations of society at times embarrass the judgment of the purest-minded statesman. At a later period, he was raised under the administration of Mr. Percival, to the rank of Privy Councillor to the crown, and was afterwards appointed to a situation in Scotland, which was incompatible with his retaining a seat in Parliament.

When, in 1794, the external and internal dangers of England increased to a formidable extent, and the necessity of an increased military force became apparent, Sinclair, at the request of the government, raised, principally from among the Scotch Highlanders, a battalion of 600 men, for service in England, and soon after a corps of 1000 additional, for that of Ireland. They were the first troops of the sort raised, for the purpose of being employed out of Scotland. The most remarkable circumstance connected with this undertaking, and of which Sir John feels justly proud, was, the absence of all dissension, and the uniform good health and exemplary conduct of these troops.

Although an adherent of ministry, and capable of every exertion and sacrifice for the state, Sinclair was too enlightened and bold a character ever to become a mere party man. He knew the value of the opposition, and when conviction dictated such conduct, defended its measures. He was a friend of Pitt, and an admirer of his great endowments, but not blind to his weak points. He saw the minister's ignorance of military science, his want of intimate acquaintance with, and ability to ap-

preciate the importance of, foreign powers; and felt so thoroughly convinced of the inadequacy of the means of defence opposed by Pitt, in 1796, to the tremendous developement of the warlike resources of France, that he seriously thought of transporting himself with his family to the United States of North America. But the dark cloud passed away; and if the times were bad in his native land, they afforded, for that very reason, a nobler field for the exercise of his benevolence and patriotism.

While yet a young man, Sinclair made several short tours on the continent; but in 1786, he undertook an extensive journey through the northern states of Europe, visiting St. Petersburg, Vienna, and Berlin, and returning through France and the Netherlands. It was his good fortune, to make his travels the source of two important benefits to his country,—an improved method of coining, and a better system of manufacturing gunpowder.

Sinclair's activity as a writer is unsurpassed. His literary works are as numerous and comprehensive, as they are instructive and impressive.—His first work, published in 1782, is an essay on the Scottish dialect. The subject of the work is philological, but its object political; for it was an attempt to approximate the conversational language of the Scots and English, so that the two nations might be more closely united. This publication was succeeded by treatises on Parliamentary Reform, the Naval Strength of Britain, on Militias and standing Armies, the Retention of Gibraltar, the Corn Laws, and Finance.

The last mentioned pamphlet, suggested the compilation of his celebrated History of the Revenue of Great Britain, a lucid work, and full of useful matter. It has gone through several editions, and been frequently translated. This was followed by a volume of Essays on Agriculture, and the Art of Preserving Health; and that again gave rise to the Treatise on Longevity, in four volumes, a work which has not a little contributed to raise the reputation of the author, and which, in its philanthropic tendency and enlightened views, may rank with the work of Hufeland on the same subject. A work on the agriculture of Scotland, and a Code of Agriculture, with some fugitive pieces, complete this series of his labors. The fame and gratitude which his exertions have acquired, may well be flattering to our author. Foreigners emulate his countrymen in the expression of these feelings, and the French, in particular, honor him by turns with the titles, "*Le premier Agronome de l'Europe*," "*Le Grand-pretre de Ceres*," and "*Le Heros de l'Economie Rurale*."

A new genius of literary undertakings, however, exalts our admiration of Sinclair. By unwearied seven years' exertions, he completed a Statistical Account of Scotland, in twenty one volumes octavo; and by his power of exciting and cherishing activity, he has caused the compilation of seventy volumes of agricultural reports, from every county of England and Scotland, independent of some kindred undertakings which remain unpublished. These enormous collections have been the fountain of important discoveries, and innumerable reforms, to which the accumulation of such superabundant materials has necessarily led.

But lest our readers should imagine that this man, so variously and deeply busied with calculations, comprehensive views, and auxiliary studies of every kind, whose works, though in general fertile of instruction, yet are individually dry, and incapable of furnishing the refreshment which we derive from the realms of poetry, it is time therefore to pass in review, his claims to the possession of sentiment and *esprit*. On every opportunity, he evinces both inclination and facility of expression in verse. This gift he seems however to have used sparingly in his riper years; and yet circumstances have brought him in contact with the national muse. The poems of Ossian, first made known to the world by Macpherson, had awakened astonishment and enthusiasm throughout Europe, before their authenticity began to be questioned. At length, some distinguished critics undertook, in the absence of historical, to demonstrate, by internal evidence, that they were a modern imposture. The deep silence of Macpherson, was regarded in the light of a confession; and the question remained undecided long after his death, although he had left the original Gaelic poems behind him, and expressly destined a sum of money for their publication. A committee of the Highland Society of London was appointed to investigate the matter: Sinclair was appointed chairman; and chiefly owing to his exertions, this body was enabled to establish the truth, that Macpherson had really procured legendary songs still lingering in the Highlands, and even preserved in one or two instances in MS.; but had arbitrarily omitted several passages in his translation, added much of his own, and not unfrequently mistaken the sense of the original. The original Gaelic text was, with much difficulty, prepared for the press; and this service gained for Sir John an increase of attachment on the part of his countrymen, and new laurels for the literary world.

Loaded with such fruits of a life of energetic activity, our author has now reached that advanced age, from which he may look back with satisfaction on his career and his labors. If the influence of his lessons, and his example in the world at large, extend beyond the reach of vision, and be of an almost untangible nature, what he has accomplished at home is determinate and cheering. When Sinclair journeys through his own lands, or those of his neighbors, and sees the cultivation of the soil, the manufactures and population of the country continually increasing—his native village transformed into a thriving town,—a wretched fishing village extended to an important harbor, where 100 vessels find secure anchorage, and in its neighborhood whence 1500 fishing boats set sail of an evening,—when he looks round, and sees himself in wealthy circumstances, surrounded by twelve children and fourteen grandchildren,—he must feel gratitude to the Providence which has given such an evening to his day, an evening which we fervently pray may be of long and happy duration. But Sinclair dreams not even yet of repose. The gray-headed veteran of seven and seventy years, looks cheerfully and actively to futurity. Leisure would be to him a burthen. He knows that man is only worthy of living, so long as he prosecutes generous resolves, and feeling himself yet full of vigorous intellect, he prepares to complete the system of his literary undertakings. He has already published Codes of Agriculture and Longevity, but he wishes to accomplish a similar compendium of Political Principles, and then a Code of Religion; for he sees that new views of the super-sensual concerns of man

open upon him from the station he has assumed.—The completion of these works he proposes immediately to undertake.

The present book presents itself, as a spot of serene repose, between these regions of severe labor. It is the result of a backward glance at many bygone days and long terminated connexions. Sir John thinks justly, that it would be a pity to withhold so many important relations of his long and active life, (his friend Bishop Gregoire called him the most indefatigable, and extensively acquainted individual in Europe,) from the preservation to which the mere names of the parties concerned entitle them. He has therefore made his selection from his extensive collection of letters and other documents, a gallery, which makes us thoroughly acquainted with his own character and many other matters of importance. We will not blame him for assigning places to several unimportant notes, nor for much that is unimportant, and a little that is contradictory, in the remarks appended to some of his documents. In company with so gallant a veteran, we are charmed with his benevolent and amiable loquaciousness, and the importance which he attributes to every thing. And, indeed, the standard of importance differs with every reader: we confess that a few lines from Nelson, were, for the name's sake, most interesting to us, and other readers, who will feel a like predilection for scraps, which have little attraction for us. Other articles again, contain more explicit intelligence; as, for example, that concerning Washington, whose pure and lofty character, is beautifully expressed in a whole series of letters and illustrative anecdotes. The variety, too, is so great, that it must satisfy every expectation. The greatest contrasts, the most remote extremes, lie here peaceably together as in a traveller's album. That the eminent men of Sir John's own department, Arthur Young, Pictet, Adam Smith, Say, Rumford, Thaer, Baron Voght, Fulton, &c. should be all here, was to be expected: but in addition to these, we find besides, Madame de Stael, and the Countess de Genlis,--the excellent Hannah More,—Field Marshal Romanzow Sadunaisky, and the tragedian Kean,--Count Bernstorff and General Paoli,--Jefferson and Count Zenobio,—Prince Polignac and General Lafayette, beside Bishop Gregoire; the two last on account of their philanthropic principles, peculiarly dear to Sinclair. As an Englishman, Sinclair is accustomed to tolerate every political party, to stand true to his own, and attack his antagonist with eagerness, yet without personal animosity. This is not the case in other countries, where the contest has not yet been reduced within the bounds of law, and where the antagonists have not yet acquired the habit of regarding each other like the officers of two opposing armies, who do their best to wound and kill each other, yet "*all in honor.*"

For the Farmers' Register.

TAR FROM PIT COAL, A CHEAP SUBSTITUTE FOR PAINT, FOR THE ROOFS OF HOUSES.

I applied to a painter in Richmond last summer to furnish me a bill of paints, &c. for a small building then erecting, who advised me to use what he called coal pit tar, for the roof, instead of paint.--I have followed his advice, and am very much pleased with the result. The color produced from the tar is a beautiful glossy dark slate. Time only can determine whether it will be lasting; but I see no reason to doubt it. The tar is obtained from the pit coal in its process of distillation for the production of gas. It cost me in Richmond $5 50 per barrel of 33 gallons. In Baltimore, where it is manufactured, the cost would probably be much less. F. H.

Frederickshall, Louisa, Sept. 20, 1833.

For the Farmers' Register.

COMMERCIAL REPORT.

The prosperous state of commercial affairs which I mentioned in my last communication, has suffered no diminution; and the complaints of dull times, low prices, losing business, and scarcity of money is not now heard either from the farmer or the merchant.

It is true that the crops of grain, tobacco, and cotton are smaller in quantity than would have been produced had the seasons been favorable; but, with the exception of the great deficiency in wheat, the prices compensate for the diminished quantity.

The wheat crop has been much less productive than for several years past--the price has not been under 105 cts. and generally 115 to 120--now 112 to 118 cts. The mills will cease their operations earlier than usual for want of grain.

An unusual prevalence of cold weather during a part of August and September, and an almost continual drought during those months, has diminished the product of cotton very considerably, none of the latter blooms having matured—but the earlier ones produced a very fine crop, and new cotton already appears at market in considerable quantity, and commands from 15 to 16 cts. Whether this high price will be maintained, must chiefly depend on the productiveness of the western crops, which cannot yet be ascertained—nor indeed can those of the Atlantic states, with any tolerable accuracy.

The business of extracting oil from the cotton seed has considerably enhanced the relative values of cotton in the rough and clean or ginned state, in the vicinity of the oil mills. Formerly one tenth was exacted for toll—now, the seed is considered a compensation for the labor of ginning and packing.

The result of the tobacco crop is not yet well ascertained. On the waters of Roanoke a very short crop is expected, but on James River an average one. The export from Kentucky has been very deficient, and that from Virginia not large. The stocks in all foreign markets are reduced, and there can be little doubt that the new crop will command very good prices.

The most important articles of foreign produce have advanced in price beyond the reduction of the duties on them, and the consumer has to pay more than he did under the high tariff. The West India question has affected some articles, and increased consumption has enhanced others. X.

GERMINATION OF SEEDS.

The presence of oxygen gas being the principal requisite for germination, and chlorine the most powerful agent for developing this gas, it has been found that healthy seeds, steeped in the chlorine fluid, are accelerated in their germination; and that others, which appeared to have lost their faculty of germination, have recovered it by the same process.—*Humboldt.*

TO THE TOBACCO PLANTERS.

From the Richmond Enquirer—1827.

As the price of wheat must necessarily remain low while a general peace continues, and its production has been very much curtailed of late years, from the uncertainty of making good crops, our attention will consequently be more and more turned to the culture of tobacco; and as 30 to 50 per cent. has generally been lost on this crop, from want of better management, feeling it a duty, I take pleasure in pointing out your defects, and in suggesting the proper amendments; and to those who are sceptical, I recommend a partrial trial and experiment. As I shall recommend nothing more than what has been practised by some of you to great and very satisfactory, as well as profitable success, I hope others will feel a confidence, so far at least, as to make the trial. My object is merely to communicate to all, a knowledge of the advantages discovered and enjoyed by a few.

TOPPING AND PRIMING.

Two great errors are in general practice, in topping and priming. On the rich land you generally top too low; almost all the tobacco made on the rich land is too large, too coarse and curly, in consequence of topping too low and planting too far apart. On such land as you generally turn out and make ten leaves to the plant, you should aim at making twelve at least, by topping to about sixteen, and not finish priming when you top, but commence again when the four top leaves get about half grown. If the seasons should produce a rapid growth, indulge some of the suckers the high topping, and permitting the suckers to remain awhile, during the rapid growth of a wet summer will cause the leaves to be smaller, grow slower and of finer texture. When the four top leaves get half grown, prime off two more, and sucker clean; by this time you can determine whether your crop will probably come to the knife late or early; if late, prime off two more in a short time; and if you should shortly thereafter apprehend its suffering from dry weather, prime off two more. This will, in general, bring you to the tenth, middle, or latter end of September, with ten leaves to a plant. If the drought should then have been so severe as to have kept back the growth too much, and the leaves now be much too small and no rain yet, prime off two more and take your chance with the remaining eight, which will weigh as much, when ripe, as any greater number would, if permitted to remain.

But if the crop should not suffer from dry weather, your plants will produce at least twelve good leaves; and if the seasons should be very good, thirteen to fourteen might well be made. Nothing is easier than to keep down the size of the leaves, and prevent them from getting too large, if you will only top high and indulge the suckers to a proper extent in the early part of the summer, when the seasons are favorable to rapid growth. Sucker and prime judiciously, as the rains subside and dry weather sets in.

By turning out a superabundance of leaves, it enables you to speculate on the weather in this crop with more certainty, than any other ever known to the writer. *Some planters always make fine tobacco.*

The tobacco on the middling rich land, of light, quick, active qualities, should be topped high also, and treated in the same manner as recommended for the rich. Two great advantages result from high topping: it causes the upper leaves to branch out from the stalk much further apart than the lower, which gives them more benefit from the genial rays of the sun, and latent properties and substances of the air, which feed the plants by absorption; and the upper leaves have a better shape, not so curly, and much smoother and more valuable than the lower.

The four top leaves of a plant of ten, are, in general, worth more than the other six, although the four are not so large, and do not, in general, weigh half as much as the six. The four top leaves are always the richest, if ripe, and of much the best and most useful shape. They are decidedly so when a plant is fully ripe, because they have the greatest benefit from the sun and air, and act as a shelter and covering to a great part of those below them: and the covered shaded parts of the lower ones are always thinner, more chaffy, and lacking in substance, texture, color and elasticity, as well as flavor.

Hence the great advantage from high topping, since we all certainly know that kind nature's good arrangement causes the branches and limbs of all vegetation, from the grass to the tree, to bud and spring out further and further apart as they approach the top. Nature's design and wisdom, in this regulation, cannot but be manifest to any one who will reflect a moment upon the subject: it is to prevent the upper from stifling and suffocating the lower, if I may be indulged to use such terms on the subject of vegetation.

As the same rules are also applicable to the culture of tobacco on thin land, such as can just barely produce a crop, I need say but little, particularly as I am not disposed to encourage its culture on poor land; on such as one-third to half the Virginia crop is made, which neither pays for the labour nor loss of soil.

But it is the general, current, and very erroneous opinion, that much of the fine high priced tobacco has been made on poor land. It will be well to correct this error, as it has caused much injury, and great loss of labor, and final destruction and death to a great deal of thin land, either poor originally, or in the last stage of consumption, by the Virginia-killing mode of cultivation. It is true, however, to a notorious degree, that several poor counties have of late been very conspicuous, and, perhaps, meritoriously celebrated, for making fine high priced tobacco; but the fine tobacco was not made on poor land, when the land was actually poor; it was made on the richest, liveliest spots that could be picked out in those poor counties; and the poverty of the circumjacent lands and country tends very much to brighten and increase the fine flavor in curing, because the atmosphere of a high, dry, poor country is much sweeter and purer than it can possibly be in a rich country, particularly low mud lands, rich low grounds on rivers of wide bottoms, where the exhalations keep the air highly impregnated with too much oxygen and other acrimonious and deleterious matter, which the tobacco imbibed to too great an extent in its growth, and should be thrown off in curing, and would lose in a purer state of atmosphere, in the process of what you call, *coming and going*. Consequently, it would be of great advantage to

the flavor of low ground tobacco, to take it up to the high land of pure air to be cured. It is as impracticable to make rich or fine high priced tobacco on poor land, or rather on poor tobacco hills, as it is impossible for nature to generate something from nothing, without any primeval essential matter to act upon.

Then to account for and explain the erroneous opinions in circulation, that much of the fine high priced tobacco has been made on poor land, let the following fact suffice, the evidence of which abounds extensively amongst you. Many of you who have not rich land, have resorted to the necessity of picking the best spots of your thin land with only a thin coat of soil, and that coat nearly all composed of vegetable matter, scraped into hills, which caused them to be tolerably rich, active and productive for one or two years, and this is generally new ground. In this way, a part of the fine high priced tobacco has been made, but much the greater part has been produced by the rich land, with the aid of the art of high curing, with but little or no fire.

CUTTING AND FLAVOR.

These two terms appear at first to be unconnected, but as the latter depends very much upon the former, I have united them. No one essential is more material to the value of tobacco, than a good fine flavor.

One of the greatest errors is committed, in cutting before it gets *entirely* ripe, which is the chief cause why so much is defective in flavor, color, and substance; and why so much feels rich and thick without looking or being so.

As tobacco is an aromatic plant, and one of the most fragrant and odoriferous that is indigenous to this country, when ripened and cured to its greatest perfection, it is not strange that so much of it should lack those qualities when cut before it is ripe; particularly when we take into consideration, that the odors of nearly all the aromatic family are very delicate and volatile, and never acquired in the greatest degree, till the last stages of their growth, and some never fully consummated till they get through the process of curing, which is peculiarly the case with tea and tobacco. Much of the flavor, as well as substance and weight, are lost by premature cutting. But these are not all the losses from it; the impracticability of curing with a good, lively, healthy color. A dull dingy hue will inevitably be the aspect of all that is cut green, cure it as you may. But it can be cured of a bright color, which will soon fade away, like a thin, poor patient in a fever, after it abates and subsides.

As I hazard nothing in the declaration, that every rich plant cut in perfection, fully ripe, whether on rich or thin land, bottom or high land, may be cured of good color and flavor, that will be lasting and delicious to the taste and smell. And although good color and flavor constitutes the chief value, yet no more than about one-tenth of the Virginia crop has ever come to market with these great advantages.

Of all the plants known to the writer, tobacco is constituted and composed of the richest, strongest, and most delicious, and also the most delightful ingredients. The alcohol *or* spirit, the oil and opium, the sugar *or* saccharine matter, the mucilaginous wax and gums, the acids and nitre, with several of the other volatile salts, &c. all so harmoniously combined, constitutes this the richest and most delicious compound ever engendered and generated in any one plant. No wonder, then, that all classes of every country and clime, from the savage to the civilized part of mankind, should take delight in its use. It forms the traveller's companion, and the philosopher's aid. It is the old bachelor's antidote; the epicure's last resort, and sailor's and soldier's third daily ration. It keeps open the sentinel's eyes; and besides medical, and many other good effects, it cheers the watchman in the silence of the night. Wonderful weed of American origin!

COLOR.

Many incorrect and erroneous opinions have gone into circulation respecting color; impressions have been extensively made in the country that yellow is a favorite color. A bright lively color is invariably admired by the purchasers, who give the highest prices. But neither brown, red, nor yellow will do. A rich mixture of red and yellow on the under side of the leaf is desirable. Such a mixture as is to be found in fat lightwood, and brilliant, rich, bright mahogany. The dull brown and dark dingy colors, are very objectionable. The next best color to the favorite one just described, is a rich, deep yellowish green, or rather the fat lightwood color, with a slight admixture of tinge of green; but it is so much the worse of the green, in the ratio that it contains that shade which lessens the fine flavor, and detracts from the value.

All rich, ripe tobacco, can be cured of the fat lightwood color with its rich aspect—and as the greater proportion of you understand two processes which can produce the effect, and you can obtain the information from each other, a description (which is difficult) is deemed unnecessary.

A similar color, in a faint and feeble degree, can be given to the poor, thin tobacco, and is certainly a handsome dressing for it in the new state, and is well calculated to take with superficial judges. But as such a dressing injures the stamina, and increases the fading in going through the sweat, either on land or at sea, it should never be attempted, as it is an injury, and will never take with any competent judge.

The dapple, or pieball, is very much admired by many purchasers who are esteemed good judges; and when this aspect is given to that which is very potent, it is similar to Jamaica 4th and 5th proof rum, which can lose a great deal of strength and still be sufficiently good and strong. But those variegated colors are a disadvantage. The variegation is produced either by too rapid curing, which exhausts the lightest colored parts too much, or by bruising and pressing; and when the bruised parts come to be acted upon by the air, either in or out of the hogshead, they fade and exhaust: this bruising is the cause why manufactured tobacco fades sooner than leaf, both being equally exposed to air, and of equal quality originally. A competent judge had rather have the under side of the leaf, stem and fibres, all of one color, *of the fat lightwood appearance;* and this uniformity in color proves the maximum, and is the best evidence of rich, well cured tobacco, in its highest perfection of growth and curing.

FIRING AND CURING.

Firing has been carried to great excess and very much to the injury of tobacco of late years, both in smoking it too much, and parching and curing it up too rapidly. The smoke is a very objectionable flavor, and the excessive parching makes the leaf too crisp, and destroys the valuable elasticity. It should be well cured, with as little fire as possible. *Some cure it very well without fire.*

Several years ago, a great number of planters took up the impression, that the purchasers were fond of hard fired tobacco, from the erroneous opinion of some of them, who said they liked to smell the effects of fire, because it was an evidence that it was well cured; but they have since discovered their error, and no one is now fond of the smell of smoke, which is a great objection in every market in Europe, as well as in America.

PRESSING IN HOGSHEAD.

The leaves in the bundles, which should not contain more than four to six, should be arranged staight and parallel with each other, not folded one within another--nor for the leaves in one bundle to mix with those of another. Some planters are in the habit of packing their bundles very straight in large bulks, and pressing them down with heavy weights in proper order for pressing in hogsheads, and when they pack them in hogsheads, turn them up edgewise, and pack the flat sides close together, edges up, which causes the bundles in sampling to come out very straight, and of a very handsome appearance. *This is the best mode.*

As many of the essential properties of this delicious plant are very volatile, the sooner it is well cured and pressed in hogsheads, the better, and the hogsheads cannot be too tight. And when a crop comes in early, and can be well cured in autumn, and pressed in hogsheads at that season, it should be done. It will be more potent, contain more stamina, and retain more of the fragrant and odoriferous essences, as it will imbibe much more of them in autumn than at any other season of the year, because the atmosphere contains more at that season than any other, in consequence of there being more imparted to the air from the decline of vegetation at that period, when the vegetable kingdom renders up to the atmosphere, much of the valuable, and most of the delicious excellencies, to the transmigrating elements of heat, moisture and air; and as tobacco has very attracting powers, and great capacity to receive, it has very great influence over those substances which drying and decaying vegetation throws out to the winds, through the agency of caloric and moisture. I have never known tobacco in hogsheads to be so exquisitely fine and high flavored as that which had been pressed late in autumn. It is, therefore, an error, in my opinion, when it can be avoided, to let it stay out of the hogshead during the winter. It will be continually losing during its exposure to the air, either in bulk or otherwise. As the air circulates twenty to thirty feet below the surface of the earth, you must agree that it circulates much more in a bulk of tobacco, and much more in a bulk than in a tight hogshead, when hard pressed. The winter and spring winds get so many washings from rain, that they become thin, poor and hungry, and will feed upon almost every thing. The autumn winds, on the contrary, get fat from the dying and decayed vegetation, and have much to part with to all attracting bodies. Thus the fall is the most unhealthy for man, and most nourishing to tobacco.

STRIPPING AND ASSORTING.

The four top leaves that are good and perfect, (not ragged,) and nearly of the same size, should all be put together to make the first class, as they always will be the best when ripe; and the others should be assorted in the same manner as to size and quality. The mixing of large and small, good and bad, gives a bad appearance and causes a crop to sell for a much less average, than if assorted. There is now too much experience in almost every neighborhood to doubt this assertion.

SUBSTANCE AND TEXTURE.

Many incorrect opinions have been expressed by planters, of late, respecting these two qualities. I have heard, with regret and surprise, a great many say, that a yellow, thin, hickory leaf substance was very much in demand, and has commanded the highest prices. This is one of the most erroneous opinions in circulation, and I will attempt to account for its origin. Several manufacturers have, of late, selected the bright, rich, sweet delicate tobacco of very high flavor, and although thin and delicate, yet rich, but chiefly of the oil, spirit, and saccharine constituents. And as manufacturing has increased, and this kind of leaf diminished, the competition for it has been great, and caused many sales to be made, of late years, at two, three four and five dollars per hundred, above the average top of the market for other export qualities; and although that kind is suitable, and is, perhaps, the best for exportation, our manufacturers generally outbid the exporters.

When high sales of this kind have been made at very high prices, I have seen planters in a kind of indignant, contemptuous manner, pick out some of the poorest leaves, and say—this is the kind of stuff you want, and for which you give such high prices; and for my thick, rich, substantial, real tobacco, you will give only about half; I can easily make such as you want on any of my poor land, which is a very erroneous opinion. None but new ground or high land, well manured with vegetable matter, such as straw, leaves, and the like, is competent to produce such. And although this kind of tobacco is rather thin, and appears poor to the superficial eye, it is, nevertheless, rich, and of the most delicate and delicious ingredients just mentioned; and having less of those gross, potent, strong, cloying substances peculiar to the low grounds, and rich cow-penned highlands or lots of stable manure.

But as 500 to 1000 hdds. per annum, of such tobacco would now more than supply the American demand, the latter quantity would so far glut the markets, as to put down the prices of such even with, if not lower, than the other best export qualities, because France, which of late years pays higher prices than any other country, wants the very richest in every respect, the most potent and fragrant, to mix and give substance and flavor to the indigenous of their country; the culture of which was greatly increased during Napoleon's continental blockading, non-commercial system, and has since been continued under the regulations of the government of France.

Texture is very important. A close, fine grain

is very requisite, and cannot be acquired from a quick, rapid, luxuriant growth, which always produces coarse grain, and open, spongy texture. Rich low-grounds are more disposed to those defects than any other, because they contain a greater humidity of air than high land of equal fertility. But I have seen low ground crops of very dry years, some of them from the James river bottoms, that were of the middle sized leaf, (owing to the drought,) not too large nor too course, cured of the fat lightwood color, of fine grain, and close, good texture, and of middling good flavor, which might have been very much improved in flavor, by curing on high land, in the purer state of air. Planting closer, topping and priming higher of seasonable years, would produce the same good results, and make more leaves and heavier crops than the common mode.

As some of you agree that high topping, high priming, and priming gradually, according to the growth, will cause the growing to continue two to three weeks longer, and produce smoother, smaller leaves of finer texture, I hope others will profit by this information; at least all who have strong, rich land, and have been in the habit of wide planting, low topping, and making it large and coarse, which never commands the best prices.

ORDER.

Erroneous opinions have also gone into circulation on this part of the subject. Some think it should be pressed in hogsheads, in soft, damp order, so as to give it a motley, dapple, or piebald color: as these are the effects of bruising or parching in firing, it is an error to press in that order. Others think it cannot be pressed too dry; which opinion is often expressed by purchasers, and is also erroneous, and has induced many to press it too dry. It should be pressed in just such order as to cause the leaves to adhere, but not bruise, nor become dapple, motley, or piebald. And it should never be handled nor pressed, but in soft, mild, humid weather. Nay, indeed, there is no certainty of ever pressing it in proper order when the wind is from any northwardly or westwardly point between N. N. E. and W. S. W. That is to say, the northwardly and westwardly winds are too dry and harsh.

The safest and best weather is under the southwardly winds, the nearer due south the better, because the softer. The proper order for striking and pressing, is in soft, humid southern weather, when the leaf will just barely yield to the pressure and squeeze of the hand without crumbling; and it should always lie some time in bulk before pressed in hogsheads, to get out of the curls and contractions from dying. By lying till the moisture on the surface gets diffused, the leaves will unfurl, extend and expand measurably, and become smoother. Then press it, if you find it will adhere without bruising. If not, it should be hung up, and go through the same process again.

The wax, gum, and saccharine matter are formed on the upper side of the leaf, and protect it from the sun in growing, and neutralizes and modifies the acrimonious and corroding tendency of the stimulants and acids, salts, &c. when used.

The wax, gum, and saccharine matter, becoming dissolved and washed off by rains, when the plant is ripe or nearly so, causes the leaf to burn by the first hot sun, and induces the planter to cut the plants in this state of poverty, to save them from total loss and destruction. There is a partial remedy for this dilemma; whenever the growing season of the year is not too far advanced for nature to react, repeat and make another effort, which she is always very kindly disposed to do, if within her power. But, if she is too far advanced, and on the verge of frost, the following remedy will not be unavailing.

When such a washing shall have taken place, commence as soon as possible, even before the rain ceases, and cut a part of each plant, say half, and set them bottom upwards, each on its own plant, and there let them remain till the weather clears off, and the sun kills the cuttings sufficiently for removal, and then do the best you can with them. This partly cutting, and covering the lower half with the upper, protects the lower awhile from the sun, and thus reducing the size of the plant, gives the standing part all the support from the root, which will often send up sufficient nutriment to support and protect the standing half from too great injury from the sun. And whenever a planter finds his plants nearly ripe, and apprehends much rain, and feels confident that it will take place, he should put all his force to this partial cutting and turning up, as he well knows that a plant, bottom upwards, injures very little by washing, as the substances which yield to solution are chiefly on the other (upper,) side, and the upper half thus turned up, covers and protects the lower half very much from washing. And although I have heard of but few experiments, the resonableness of the thing appears so clear and conclusive, that no one should doubt so far as to refuse to make a fair experiment.

WOOD FOR HOGSHEADS.

Too little attention has been given to dry seasoned timber for headings and staves. It should be seasoned thoroughly dry. The moisture in green wood contains an acrimonious and corrosive acid, far more deleterious and destructive than so much water. And very great injury and loss has often been sustained by green hogsheads, and partly green.

Fear not, ye planters of Virginia, that you will ever over-stock the world with fine tobacco, and thereby reduce the price. The more fine you make, the less will be made in Europe and other countries, not indigenous nor so congenial to its production.

The low, dull state of the markets for the common and inferior, is not the result of too much; it is the consequence of our inferior quality, but little or no better than what is made on the continent of Europe, which comes in competition with our inferior.

Make more, better; make all good, and you will get good prices for all. But I have heard some of you say, not so. To such I beg leave to reply, by asking, is inferior tea cheap because there is too much tea? If all the India tea were good, all would command good prices. We can raise tea also, but our country and climate forbid our making it so fine and fragrant as that which is made in India. Just so with all the tobacco which may be made in countries and climes not indigenous nor congenial to the maximum of its perfection.

If any one country or clime hath a decided natural advantage over any other in the production

of any article, as is eminently the case with India as to tea, and America as to tobacco, the result would inevitably be, that a whole crop made in the greatest perfection in the country most congenial to its production, will be worth more than if a part were fine and a part inferior--because that which may be made in countries less favorable, will compete more with the inferior than with the fine.

If I am incorrect in this hypothesis, I yield all pretensions to logic. But if you admit my reasoning to be correct, go on to perfection and profit by your improvements, which is the wish and desire of your friend,

FREDERICK ORONOKO.

—

CURING TOBACCO.

To the Author of the Address to the Tobacco Planters.

Many of we planters make grateful acknowledgments to the author of the above address. We sincerely hope that he will be so very obliging as to answer the following queries:

1. Is sunning tobacco, after cutting, necessary, and how long early in the season?

2. Whether the firing of tobacco should be in open or closed barns?

3. How many fires, and the heaps or sizes of the fires, should be in a 20 foot square room, nearly full of green tobacco; and what length of time these fires should be kept up, on the first of firing in such a room of tobacco?

4. After cutting early in the season, how many days should intervene, before the tobacco is sufficiently yellow for the first firing?

5. After the first firing shall commence, and it shall be continued for some days, say six, eight, or ten days, will any injury arise to the tobacco by putting out the fires late at night and rekindling them in the morning? What kind of wood is preferable, and whether green or seasoned?

6. If cutting ripe enough and pursuing the above means will be certain to secure to the tobacco the saleable color; that is to say, the fat lightwood color, or any other color in demand?

7. If there be any other means of curing tobacco with the most desired colors, be pleased to state them.

APPOMATTOX PLANTER.

August 6, 1827.

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To the Appomattox Planter.

I will with pleasure, endeavor to answer your several inquiries, as stated in the Enquirer of the 6th instant.

1st. Sunning the tobacco is very necessary after cutting; but it should not be kept in the field any longer than to kill and make it sufficiently limber for removal to hang on sticks, upon a scaffold at the tobacco house; where it should hang in open airy order, at first letting in the sun well upon the stalks. In this way the but-end of the stalks, and big ends of the leaves and stems will get a great deal of the sun's heat, which they require in curing. And as fast as the leaves contract and draw up from heat, and in drying, the plants should be moved up nearer to each other, in closer and closer order to prevent the lower parts of the leaves from being exposed to the sun.

It would be a great advantage to split the stalks, as it facilitates the curing very much. They should be split from the top down within two or there inches of the cutting point. The plants thus split should straddle the sticks, and the sticks should range north and south, so that the morning's sun will shine on one side of the stalks and the evening's on the other. In this manner it should take the sun and open air night and day, until it becomes well cured, and until the stalks and stems, and leaves get dry. Showers of rain, *and even heavy showers*, in this situation, while the leaf continues green, is of little disadvantage; because it were a small part, except the under side of the leaves which are now uppermost. Nearly all of the rich ingredients being on the upper side of the plants as they stand growing.

But long, hot, sultry spells of rainy or very damp weather, of many days' continuance, will mould, mildew, rot, or wash it to destruction, particularly after a considerable progress in curing. And when the weather comes from the eastward, preceded by several damp cloudy days, you may count upon a long spell, and then you should commence housing before the rain sets in, or much falls; and use fire as the weather may require.

2d. The firing should be in close houses; the closer the better. And the more windows, in reason, the better, all with tight shutters, to shut out the damp in long wet spells, and let it in when wanted to bring the tobacco in order. No tobacco can be finally well cured without coming and going frequently.

You cannot have any command of your tobacco as regards weather, without close, tight houses—which are of very great importance.

3d. Five fires, dispersed, are enough for a room twenty feet square; and they should not be large, but burn free, steady, and gradual, and would be the better of never going entirely out, if you intend curing by this destructive mode. But why make fires in the house at all? As smoke is now so very objectionable, why not do the little firing that may be necessary in very long wet, or damp spells, to prevent mould, mildews, &c. in the manner that plank is steamed and dried at saw mills; by stoves, or running a ditch or two through the house, and cover with flat slabs of rock, or arch over with brick, and make the fire at one end, out of doors, and the heat and smoke will pass through and give heat enough in a close house, with the windows all shut, to prevent mould, mildew, &c.

4th. Those who cure without firing, or with as little as possible, let it remain after it turns yellow, until the stalks and stems get dry, as well as the leaves, in the open air and sun, if the weather permits, or in the house, by the aid of fire, if necessary. But if the stalks, stems, and leaves get dry before the leaves get sufficiently yellow, let it hang until it becomes very high indeed from wet or damp weather, and bulk it in this damp, soft, high order in very large bulks, in a very close room, and cover well with straw, &c. with heavy weights on the top, and let it remain till it gets warm; examine it every three to four hours, night and day, and so soon as it yellows sufficiently, hang it up in the house if the weather be wet or very damp, and fire it, moderately and gradually until dry.

5th. This inquiry has been answered, except as to the wood. The best kinds of wood are those which make the most heat and weakest smoke. The kinds best for smoking bacon, are the worst for firing tobacco, since the smoke flavor has become objectionable.

6th. This question is not sufficiently defined to enable me to give an answer.

7th. I know of but two methods of the curing of the desired colors, viz: The quick curing by fire; and by bulking in high order, until it yellows, as has been explained.

Wishing that these answers may be satisfactory I conclude.

Your friend,

FREDERICK ORONOKO.

August 17, 1827.

VEGETABLE PHYSIOLOGY.

On a remarkable law of Vegetable Life, and its influence on several operations in Horticulture and Agriculture, by the REV. DR. FLEMING.

It frequently happens that the results of experience are extensively acted upon by practical men, in reference to particular operations, long before the principle concerned in the arrangement be distinctly recognized, or its application to objects, under other circumstances, be deemed either possible or expedient. The theoretical naturalist frequently receives the first hint of his generalizations from those who have confined their attention to effects merely, and who have marked these even under peculiarly confined limits. Yet we must be contented to receive knowledge from every quarter, though in scanty portions, and rejoice in every contribution likely to accelerate the march of improvement.

It is well known, that, in the animal kingdom, all those circumstances which accelerate the growth of the body, exercise a proportional influence on the reproductive system, so that the period of puberty is uniformly earlier in domesticated than in wild animals, and in those which are fed plentifully with food, than in those which are scantily supplied. These effects of an abundant supply of food are exhibited throughout the whole range of the animal kingdom, as far as observation has hitherto extended. The very reverse of this arrangement seems to prevail in the vegetable kingdom. Where plants are furnished with an abundant supply of food, their productive energies develope themselves slowly, and flowers and fruit or seeds are late in appearing. On the other hand, when the supply of nourishment is scanty; when the plant is, as it were, starved, and when death is threatened, the reproductive energies act with readiness, flowers and seeds are produced, and the extinction of the race guarded against; or, in other words, *the scantier the supply of nourishment, the earlier will a plant propagate its kind.* Let us now attend to some of the exhibitions of this law, and their application to useful purposes.

In reference to seeds, it has been long known to gardeners, that those which are new or fresh produce plants with more luxuriant foliage, and less inclined to run into flower or fruit, than such as have been kept for some time, and are partially spoiled. In the first case, the supply of nourishment, during the early stages of its growth, being in abundance, the plant enlarges rapidly in *size;* while, in the latter case, the scanty supply causes the plant, in obedience to the law which we have announced, to run more directly to flower and seed. These circumstances are carefully considered in the culture of cucumbers and melons, the seeds of which are seldom employed until several years old. Such indeed is the attention paid to this condition, that we find in books on horticulture the following grave recommendation: "If new seed only can be had, it should be carried a week or two in the breeches pocket to dry away some of the more watery parts." A similar attention to this law, in reference to the seeds of other vegetables, is productive of equal benefit. Peas, for example, are well known as apt to run to straw, where the ground is rich or moist. The employment of old is the only suitable remedy. In some newly enclosed *carse lands*, the evil of excessive luxuriance is frequently experienced to an inconvenient degree during two or three years. The straw is great in quantity, but the grain is always deficient. In vain is recourse had to early or thin sowing, while the use of the old seed is neglected. We need not here guard against misconception, by stating in detail, that, where seeds are kept *too long*, they either do not vegetate, or give origin to a weak sickly, useless plant. Where luxuriance of leaf and great size are the objects aimed at in the cultivation of garden or farm produce, the influence we have been considering must be guarded against as an evil; especially, for example, with turnips and cabbage; old seed producing plants too much disposed to run to flower.

Independent of the influence which this law exercises on the future plant, as the result of the condition of the seed, we have it in our power to witness the operation under other circumstances, in the *growing plant* itself. In the management of *fruit trees*, there are a variety of plans pursued, which, though obviously depending on this *law* of the vegetable kingdom, are frequently but imperfectly understood by the practical gardener. The *transplanting* of fruit trees hastens the production of flower-buds. A tree which for years has shown us tendency to produce flower-buds, but which has been exclusively occupied in the extension of its roots and branches, will, upon being shifted from its place, soon exhibit symptoms of a change. The roots, by this process, have been in part injured, the supply of sap to the tree during the following season has in consequence become diminished, and the plant ceasing in a great measure to extend its size, hastens to propagate its kind by the production of flower-buds, and the subsequent display of blossoms and fruit.

The diminished supply of sap, and the consequent hastening of the production of fruit-buds, is accomplished by several other plans equally efficacious. When a rank growing fruit tree is engrafted on a slow growing stock, or, in other words, when a tree requiring much sap is compelled to receive its supply through a tree having but a scanty supply, the engrafted branch will come earlier into fruit than if it had been always supplied with abundant nourishment. The method of accelerating the production of fruit, and termed *dwarfing*, is particularly serviceable in enabling the cultivators of new varieties to become early acquainted with their respective merits.

When fruit trees are prone to run to wood, gardeners are accustomed to lay bare a portion of their roots during winter. By this exposure many of the fibres are destroyed, and the vigor of all greatly diminished; so that the sap, during the following summer, is transmitted to the branches in less quantity, and the production of fruit buds is the consequence.

Fruit trees, luxuriant in leaves and branches, but bad bearers, are sometimes forced into a productive state, by having portions of the bark removed by the knife, or wires twisted round the stem or branches. In this case, the ascent of the sap is indirectly diminished, by the obstruction of the vessels containing the proper juices, the death of the plant, or portion of the plant, is threatened, and the reproductive organs speedily exercise their functions. The late Dr. Walker, professor of Natural History, in the University of Edinburgh, who had devoted much time to the investigation of vegetable physiology, intimates, that the effects here produced by barking, or the twisting of wires, have been accomplished by other means. He says (in the Economical History of the Hebrides, ii. p. 298,) "To some standard fruit trees, *honeysuckles* indeed may be applied with great advantage; these when even of considerable age, do sometimes continue to run so much to wood and especially towards the heart of the tree, that it remains quite unfruitful. To plant a vigorous honeysuckle at the foot of such a tree, is an easy effectual remedy, and much better than any pruning. The honeysuckle grows up, occupies the heart of the tree, checks its luxuriance, directs its vegetation towards the extremities, and renders it fruitful. A large apple tree of the above description, above fifty years old, and which always had been barren, was rendered by this practice extremely fruitful. When this end is answered, which will happen in a few years, the honeysuckle should then be removed, before it becomes injurious.

In the cultivation of *flowering plants*, a knowledge of this law of vegetable life, and its extensive application may prove of great importance. Sir James Edward Smith, in his introduction to Botany, mentions, that the Solandra grandiflora, a Jamaica shrub, was for a number of years cultivated in the English stoves, and propagated extensively by cuttings, each plant growing many feet in length every season, from the abundance of moisture and nourishment, without showing any signs of fructification. At length a pot of the Solandra was accidentally left without water in the dry stove at Kew; and, in consequence of this *unintentionally* neglect, the luxuriant growth of its branches was greatly checked, and a flower came forth at the extremity of each. By a similar mode of treatment the same effect has since been frequently produced. Indeed, when a law is once properly understood, its application to a variety of cultivated plants, which are slow in showing flower, must be obvious. We have seen it with effect on several species of willows.

In the cultivation of a farm, numerous examples are frequently occurring of the influence of this arrangement in the vegetable economy. The crops growing on the thinnest part of the soil, where the nourishment is consequently in diminished quantity, are always the first to exhibit their flowers and to be ready for the sickle. In ill managed farms, the harvest is usually much earlier, (other things being equal,) than in those where the crops are under the influence of a better system. We have had an opportunity of witnessing the delay of harvest, upon the application of lime, for example, in consequence of the increased supply of nourishment producing luxuriance of growth rather than early flowering.

In the management of *plantations*, the indications of this law may prove of great value. Wherever we see a tree, in a very young state, exhibiting its flowers, and producing fruit, we may anticipate its early decay. The premature formation of fruit-buds, is the consequence of a scanty supply of nourishment, arising, it may be, from the roots having been injured, but generally from the plant having been placed in an unfavorable soil. Fir trees readily indicate their disagreement with the soil by the production of cones, while yet young, and this early fructification is the almost sure forerunner of death. The balsam fir, for example, which thrives well on a moist soil, will, if planted on a thin dry soil, begin in a few years to produce cones, then the bark appears covered with blisters, which, when opened, pour forth a limpid resin, and the tree, after languishing a few years, dies, after, in the course of a dozen of years, having attained the height of from twelve to twenty feet. In looking at those decorated villas, near a large town, which to the citizen appear so captivatting, one may frequently discover the real character of the soil, by this premature flowering of the ornamental shrubbery.

Though plants differ from animals, in reference to this singular law, which we have ventured to establish from an extensive induction of particulars, they agree, in other respects, in the influence which an abundant supply of nourishment exercises in the increase of the number and size of the progeny.

LOAD OF A LOCOMOTIVE ENGINE.

To the Editors of the Petersburg Intelligencer.

Gentlemen—The following account of the performance of one of our engines, will no doubt interest you and many of your readers.

On Monday last, the Liverpool brought in a train, consisting of 15 cars and one coach, carrying 127 bales of cotton, 364 bushels of wheat, 162 bushels of corn, and about 30 persons including passengers and agents of the company. The gross weight in motion, may be summed up as follows:

Produce and passengers,	83,620 lbs.
Cars, coach and engines,	67,500
	151,120

or nearly 67½ tons. The weight of produce alone was upwards of 35 tons. This load was put in motion with great ease by the engine, and on level grades was carried at a speed of 15 miles per hour. It was set in motion on ascents of 30 feet to the mile, (on which we had occasion to stop and set down passengers,) and carried them up at a rate varying from 8 to 10 miles the hour.

This is the largest load which has ever been on the road at any single time and when we compare it with the small size of the engine, and consider the various ascents on the Rail Road, it may well be called immense. The Liverpool weighs, about 5 tons, and has 9 cylinders, with a stork of 18 inches, and drives four wheels. Her general working pressure is 50 pounds, ranging up to 60 at which the lock up valves blows off. I add the technical details in order that the performance of this engine may be justly appreciated by professional men. Yours, respectfully.

HENRY D. BIRD.

VIRGINIA SPRINGS.

From the Lexington Union.

The crowd of visiters to the various watering places in our mountains, continues without any obvious diminution. At the White Sulphur, up to Tuesday last, the company could not all be accommodated. A number of persons were still lingering at the public houses in the vicinity. The number which have registered their names at the above place, during the season, amounts to about 1500. At the Salt Sulphur, for a considerable time past, they have had from 140 to 190—and the register during the season numbers about 1000. The Red Sulphur has been crowded throughout the season. The Sweet Springs during the present month, as is usual, will be the point of attraction. At the Warm and Hot Springs there are large companies.

Several of our distinguished citizens have visited these Springs during the summer. * * * A number of the officers of the United States navy, with their wives—and a number of the officers of the U. S. army, hunting wives—together with all classes of the community, save one. There you will find the divine and the blackleg—the gay and the serious—age and youth—beauty and ugliness. The excluded class, with a few exceptions, are *the poor.*

That this portion of the community should be excluded from these rich bounties of Heaven, has ever been a theme of regret by philanthropists and politicians; but without having produced an effort upon the part of any individual to effect a change in their management, so as to enable the humble in life, who need their healing influences, to partake of their benefits. We well remember the substance of a conversation with Mr. Jefferson, a few years ago, when upon a visit to the Warm Springs. Mr. J. was lamenting the state of things, which excluded the poor from these healing waters,—and said in relation to the White Sulphur, that they, at least, ought to be purchased by the State—and placed on such a footing, as to enable all classes of the community to enjoy their benefits—and that, if they could not be procured by negotiation, the state ought to condemn them for public use, upon paying the proprietors a liberal price for them; and urged, as an argument amongst others, for such an innovation on private rights, that they were great public blessings, placed there by the hand of God, for the benefit of the human family—and that no individual, or set of individuals, had an exclusive right to their enjoyment. That the argument of public necessity and public utility, operated with ten fold force, in relation to the health of the citizens, than it did, in relation to his convenience, which authorised the condemnation of lands for roads, mills, &c. This is an imperfect sketch—a mere outline of the views of that distinguished man. The idea was new; but his arguments satisfied us not only of the power, but the propriety of the measure.

The State of New York purchased Saratoga—made the waters public property—laid off a village—sold the lots—and realized a pecuniary profit. The number of visiters at that Spring, during the present summer, has been as high as 3000. Hotels of various grades, exist there,—where the poor can be accommodated—where boarding can be had exactly in proportion to the dimensions of the purse.

No man can doubt, that if there were accommodations upon the plan of Saratoga, at the White Sulphur—(we select it on account of the advantages of quantity of water, not because we believe it possesses superior virtues to the Salt Sulphur, and perhaps, others)—that in place of having, at the same time, 300 visiters, it would have 3000. The foreign capital, which would thus be introduced into the commonwealth, would be felt throughout all our borders,—and especially in the mountain region—and the richest blessing which man can enjoy, secured to the poor, as well as to the rich.

OAT GRASS.

From the American Farmer.

Beaver Dam, Va. March 30, 1831.

GIDEON B. SMITH:

Respected friend—Amongst the grass cultivated in our country, there is one which I think has not received its due share of attention. I speak of the Highland meadow oats, sometimes called Peruvian grass; *avena elatior.* The first person who tried its merits in this state, as far as my knowledge extends, was the late Col. Taylor of Caroline, who cultivated it a number of years; and in a paper read before the Agricultural Society of Virginia, drew a comparison between it and various other species, as adapted to our climate, highly favorable to its excellence. It has also, if I mistake not, received his encomiums in some communications to the American Farmer, as well as those of other contributors to your valuable Journal.

It possesses the merit of affording an abundant supply of herbage, at a very early, as well as to a very late season. It shoots up sooner than the orchard grass, and retains its verdure longer; when the heats of summer, however, overtake it, it furnishes less pasturage; it answers exceedingly well to sow with clover. The period at which they come to the scythe being the same, and the meadow oats retaining its erect position, thereby serving to support the clover, render the mixture of these two grasses very desirable. Timothy, which is frequently used to mix with clover, ripens so much later, that it can only answer a single purpose.

The best season for sowing the seed is in the fall, at the rate of about a bushel to the acre. The young plants are very hardy, and survive the winter without injury. I have, however, succeeded well after spring sowing, and farther north it might be attended with equal or better success. In either case, the ground should be harrowed after sowing.

I have found it to grow well on all lands that are not wet. Its name indicates that it is better adapted to dry land: and, accordingly, I have not had it to thrive where the soil was very moist. In lands that suit it, it will remain without deteriorating, for an almost indefinite time, neither suffering the encroachments of other grasses, nor failing from a want of the peculiar food necessary to its sustenance. Neither do I perceive that it becomes more thickly set. I have now a lot that has been standing for a number of years, and the growth is still as vigorous and luxuriant as at first.

My experience goes to show that it is well calculated to improve the land. The first that I sowed was on a very thin lot, which, in wheat, scarcely doubled the seed at the time it was laid down in

this grass; and after it had remained in this state three years, the ground was fallowed and sowed in rye, which yielded thirty bushels per acre.

I do not consider the fodder afforded by the tall meadow oats, alone, to be equal to that of timothy, nor is it so great in quantity; but as they are adapted to different soils, their relative claims to regard cannot be fully brought into view. The chief merit of the oat grass is the early and late herbage it furnishes; its excellence for mixing with other grasses on lands intended for the hoof, the pressure of which it will bear for any length of time; and with clover particularly when designed for hay. It will, moreover, flourish well on land where clover and orchard grass will not take; and that there is much of this quality, I fear is lamentably the case, even amongst the readers of the Farmer. Though it fails in its luxuriance in the summer months, it springs up in the fall with freshness and vigor, and remains verdant till the end of the year. On the whole, I consider it exceeding valuable and richly deserving a more extensive cultivation.

I would add, that as the seed are shed with great facility as soon as they become ripe, some attention is necessary to watch the proper moment to save them. One or two days may make an important difference in the crop. They ripen with me early in June.

Respectfully, T. S. P.

ORGANIC REMAINS FOUND IN THE MARL PITS OF LUCUS BENNERS, ESQ. IN CRAVEN COUNTY, N. C. *By H. B. Croom, Esq.*

It has long been known to the public that large deposits of sea shells exist in different parts of the alluvial country of the southern states. They have been observed on or near the Tar River, a few miles above Tarborough; on Neuse River in the Counties of Wayne, Lenoir, and Craven; on Cape Fear River in the County of Bladen; on the Savannah River a few miles below Augusta; on the Oakmulgee River, at Hartford; and finally I have observed them on the Appalachicola River, in Florida, on the summit of a ridge not less than 150 feet above the bed of the river. Of these deposits I have seen, and superficially examined two on the Neuse River, the one at Hartford, and that on the Appalachicola. They appear to be coeval. Oysters, Pectens, and Arcas, of the same species, predominate in each, mingled with the teeth of sharks and a variety of other univalve and bivalve shells. The catastrophe by which these remains were buried, appears to have been *sudden*, and not gradual, as has been remarked by Professor Mitchell. This is evidenced by the fact that many, both of the largest, and of the smallest and most delicate bivalve shells are found with their two valves closed and arranged as in a living state, as though they had been suddenly covered up while living.

Of all these deposits however, not one has been extensively explored except that on the estate of Mr. Benners, occupying the north bank of Neuse River, 16 miles below Newbern. Several years ago Mr. B. commenced digging the marl which accompanies these deposits, [and which has resulted from them by the mingling of the decomposed shells with the contiguous earth] and spreading it on his fields, which have been much benefited by the application. In the course of his operations, several pits have been dug, some of them to the depth of 25 feet below the surface of the earth, and ten feet below the present surface of the river. In the course of these excavations a great variety of interesting organic remains have been found, consisting of sea shells, bones and teeth of fishes, and the bones of land animals of prodigious size. Mr. B. informs me that the following is the order in which these remains have been found:—1st. Sharks' teeth, and the fragments of bones of marine fishes mingled with sea-shells. 2d. Teeth, horns, hoofs, ribs, vertebræ, &c. of quadrupeds that inhabited the land, mingled with sea-shells of great variety. These remains of land animals are found at the depth of from 20 to 25 feet below the surface of the earth. Among them are recognized with certainty the teeth of the great mastodon [Mastodon giganteum of Cuvier,] the hoofs, horns, and vertebræ of an elk of great size, and the teeth of an animal supposed to be the hyena.

I will now subjoin a more minute account of some of these remarkable remains:

I. SHELLS.

1. Pholas costata. Length $1\frac{3}{8}$ inches. Breadth $3\frac{1}{2}$ inches.
2. Clam shells [Venus] one of these in my possession measures 5 inches in length and 7 inches in breadth. One which Mr. B. gave to Mr. Nuttall is a third larger than this.
3. The grooved Conch [Strombus.] Length $5\frac{1}{2}$ inches. A species supposed to be extinct.
4. Murex. Abundant and of different sizes.
5. Cardium. [Cockle.] Not common.
6. Solen. [razor shell.] Length $\frac{3}{4}$ inch, breadth $4\frac{1}{8}$.
7. Arca. " $2\frac{1}{4}$ " " $2\frac{7}{8}$.
8. Pecten. [Scallop.] " $4\frac{5}{8}$ " " $4\frac{1}{2}$.
9. Ostrea. [Oyster.] An extinct species?
10. Patella fornicate. Length $1\frac{1}{8}$ inch. breadth $\frac{7}{8}$
11. Pectunculus. " $1\frac{1}{2}$ " " $1\frac{3}{4}$
12. Conus. [Key shell.] " $2\frac{1}{5}$ " " 1
13. Buccinum. " $2\frac{1}{2}$ " " 1
14. Mya [valves gaping] " $3\frac{1}{2}$ " " $5\frac{5}{8}$
15. Donax? " $\frac{3}{4}$
16. Nerita.
17. Madrepora porites.

II. BONES AND TEETH OF FISHES.

1. Tooth of a shark. Length $5\frac{3}{4}$ inches; breadth at base within the socket $6\frac{3}{4}$ inches. Many others of smaller size.
2. Vertebræ of fishes about one inch in length, and nearly the same in diameter.

III. BONES AND TEETH OF LAND ANIMALS.

1. Fragments of the horns of a fossil Elk?
2. Hoof of a fossil Elk? 9 inches in length.*
3. Teeth of the Elk? breadth 3 inches, depth $4\frac{1}{2}$ inches.
4. A vertebra 8 inches in diameter. [Presented to Th: Nuttall, Esq.]
5. A vertebra $3\frac{1}{2}$ inches in diameter; $4\frac{1}{4}$ inches in length. [In my possession.]
6. A vertebra 1 inch in diameter; 2 inches in length.

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* The animal to which the *hoof and teeth* above-mentioned belonged, must have been much larger than a horse. The space between the extremities of the horns of the fossil Elk of Ireland is said to have been eleven feet. The bones of the American fossil Elk have hitherto been discovered only in the morass near the falls of the Ohio, called Big-bone Lick, in company with the bones of the Mastodon, &c. [Harlan's Fauna, p. 247.]

7. Grinders of the Hyena? 2 inches broad—3 inches in depth.

8. Fangs of the Hyena? 3 inches in depth; tapering to a point.

9. Grinder of the Mastodon giganteum of Cuvier. Breadth 7 inches; depth 9½ inches. Presented by Mr. B. to the cabinet of the University of North Carolina. This tooth was found at the depth of 25 feet below the surface of the earth, mingled with sea-shells.

The dimensions of this animal as given by Harlan, in his Fauna Americana, are as follows: Height at the withers from 10 to 11 feet; length from the end of the snout, to the posterior part of the pelvis, from 15 to 16½ feet. It is remarkable that not more than 10 miles distant from these pits, to wit, in the Clubfoot Canal, was found, about 4 feet under the surface, the skeleton of another species, the Mastodon angustidens of Cuvier. See Harlan's Fauna p. 214. One of the grinders of this skeleton in my possession measures 6¼ inches in width. The cutting surfaces consist of elevated and conical points, [4 pairs of points and an odd one,] differing considerably from those of M. giganteum, and scarcely seeming to have been intended for grinding *grass* and *leaves*. The dimensions of this species are said to be one-third less than the other.

That was certainly a strange world in which such animals as these browsed and prowled! and, it might seem scarcely compatible with the co-existence of man in his rude state, armed only with the bow and the club.

Newbern, 12th September, 1833.

OBSERVATIONS ON THE MAKING, CURING AND CASKING BUTTER.

[From the Elgin Courier, published in Scotland.]

[A number of copies on the subjoined, having been lately printed in another form at the Courier office, for one of our country gentlemen, we think we cannot do a more acceptable service to our agricultural friends than to insert it in this place. It was drawn up by order of the Agricultural Association, as the result of inquiries into the practice adopted in Ireland in making of butter, and of the experience of some extensive cures in the county of Aberdeen.—*Ed.*]

1. The milk house or dairy should have no internal communication with any other building. It must be kept free from smoke, well aired, and no potatoes, fish, onions, cheese, or any thing likely to impart a strong or bad smell, should be kept therein. In short, nothing but the dairy utensils, which must be kept sweet and clean.

2. The milk, when brought in from the cows, should be strained through a fine hair sieve or strainer, and when cool, put into sweet well seasoned oaken tubs, keelers or milk pans—the latter to be preferred. A tin skimmer, with holes in it, is the best for taking off the cream, which should always be churned while the cream is fresh.

3. The churns, whether pump or barrel, should be made of the best well seasoned white oak—and as cleanliness is of the first importance, great attention should be paid to the washing, drying and airing of the churns immediately after use, otherwise they are sure to contract a sour and unwholesome smell, which must injure the quality of the butter.

4. The butter, immediately after being churned, should be thrown into fresh spring water, where it should remain for one hour at least, that it may grow firm; and at the end of the third or fourth washing, some fine salt should be put into the water, which will raise the color of the butter and purge away any milk that remains among it. Before salting, it is very essential that no milk or water be left, otherwise a strong smell and unpleasant taste will be the certain consequence.

5. The butter thus prepared, should be immediately salted. The proportion of salt may be from one and one-fourth to one and one-half ounce of Scotch salt for the pound of butter—or of the best stoved rock or bay salt, one ounce to the pound. But when butter is not intended to be kept through the winter and spring, or for any long period, the quantities of salt above recommended may be somewhat reduced, the curer exercising his own judgment in doing so.

N. B. In Ireland, the use of salt and saltpetre is recommended, in proportion, of one ounce of stoved rock or bay salt, and one-fifth of an ounce of saltpetre to the Aberdeen pound.

6. It is a very injurious practice to keep a making of butter uncured to the next churning, for the purpose of mixing the two together. This mode invariably injures the flavor of the whole, and renders it of too soft a quality ever afterwards to get firm. This applies to curers who are the producers of the butter; but as the greatest quantity of butter in this country is collected and cured by merchants, they are particularly cautioned against the practice of throwing the fresh butter together, and retaining it in that state for days, until they have collected what they considered a sufficient quantity to commence curing—the butter treated in this manner is invariably found inferior to what is salted after churning. Should, however, there not be a sufficient quantity collected in one day to fill a package when cured, the quality of the butter may be preserved by giving it a partial salting, and covering it over with a clean linen cloth dipped in pickle, and placing it in a cool situation. Country dealers who are in the habit of sending carts through the districts where they reside to collect the butter, should endeavor to arrange it so between themselves and the makers of the butter, that it is churned upon the day it is called for.

7. When the butter is cured, it should be tramped firm into the ferkin with a round wooden tramp-stick, of sufficient weight and thickness. The firkin should be filled up to the crose, and then covered over with a little of the purest salt—sufficient room merely left for the head of the cask, and must be well secured, to exclude air, and prevent the pickle from getting out.

8. The Liverpool stoved salt, or Portugal St. Ubes, or bay salt, is, from strength and quality, always to be preferred. All salt must be quite dry, and at a distance from fire, to prevent the first imbibing the smell of the smoke. If kept in a cask, a little unslacked lime placed under it will prevent its drawing moisture from the ground.

9. The mixing of the salt with the butter should be done in wooden dishes, after the water and milk are completely expelled, and no time should then be lost in tramping it into the firkin, which will make it draw even and firm.

10. The milk of new calved cows should never be set for butter until at least four days after calv-

ing as a small quantity of beast milk butter will injure a whole firkin. The practice of scalding cream in cold weather should also be avoided, as cream thus treated will never make good butter.

11. Great care should be taken not to steep the firkin in boggy or unwholesome water. Nothing but the purest spring, or clean running water should be used for that purpose—and the firkins should be rendered perfectly dry inside after being steeped, either by long dripping, or being rubbed by a smooth towel. Old butter should never be mixed with new—and the lining of the casks with inferior sorts, or grease butter, is a practice which cannot be too much reprobated.

12. The casks ought to be made of the best oak or ash (the former to be preferred) and the largest size should not exceed eighty-four pounds gross, that being the size used in Ireland, and most convenient and saleable in the London market. The casks should be tight and well hooped. Beech, plane ash, &c., should never be used, as that quality wood is more apt to absorb the pickle; and independent of the injury thereby occasioned to the butter, it will often lead to dispute the tar.

To render these observations more complete, it might be thought necessary to point out the injurious, and even nefarious practices, which more or less prevail in the making of butter throughout the country; but as a perseverance in such practices must ultimately have the effect of entirely destroying this profitable branch of agricultural industry, it is hoped the makers of butter will see it to be their own interest to produce nothing but butter of the best quality, and that these malpractices, which are perfectly known, will be discontinued. The dealers in the country have it in their power to put a check to them—and it is expected they will do so, by refusing to purchase from those who adopt any artificial means to hasten the making of the butter, or to increase the quantity, while the quality is thereby deteriorated.

THE NORTON GRAPE.

From the Richmond Whig.

We invite particular attention to the article below. This is unquestionably the most delicious grape we have ever eaten, and it is matter of surprise that it has attracted no more attention in Virginia, while its qualities are already well known and duly estimated at a distance. The enterprising discoverer, Dr. Norton, whose vineyard is a short distance from this city, has sunk money by his attempts to introduce the culture of the grape into this state. It is but fair that he should be remunerated. An opinion is very prevalent that the climate of Virginia is not adapted to the culture of the grape. This is all nonsense. The resemblance between it and that of the countries where it most flourishes, and the profusion of wild vines throughout the country, prove the contrary. The fact is, the efforts of most vintagers have hitherto been directed to the culture of the foreign grape, which can never succeed here like the native. And yet some of our native grapes, when properly cultivated, are surpassed by none in the world, and never fail (as is often the case with the foreign) in yielding a crop. The grape under consideration, we understand, is as certain as Indian corn or potatoes. The proprietor has some cuttings which he is willing to dispose of, and which we hope to see distributed throughout the State. Virginia is naturally a grape growing country, and to that she must arrive at last.

For the Whig.

TO CULTIVATORS OF THE VINE.

A new and valuable variety. Norton's Virginia Seedling.

Vitis Nortoni, see Prince's Cat. 393, and his book on the Vine, page 186, for the following description of this fine fruit:

"This very distinct variety owes its origin to Dr. D. N. Norton, of Virginia. It was raised from the seed of the Bland, which fructified in the vicinity of the Meunier or Miller's Burgundy; there exists consequently some probability, that it is a hybrid between these two. In appearance, the vine much resembles the form of the two, to which it closely assimilates in its foliage. The shoots are strong and vigorous. and of a red color.—*The vine resists the cold of the most severe winters, never failing to produce fruit, and that most profusely thriving even without pruning, and requiring at most, but a partial use of the pruning instrument,* and almost equalling the Isabella in its rapid extension—like that vine, it is also well calculated for arbors, bowers, large espaliers, &c. The fruit is of the darkest purple or black color, and ripens in September, but will remain on the vine with a great increase of saccharine principle, (as is the case with the finest wine grapes of France.) until the end of October, in this latitude, (New York,) and the last week of November in Virginia. The bunches are usually 8 or 9 inches long on the old and strong vines, and weigh about a quarter of a pound each; the berries begin to form a conical bunch on the stem at a distance of several inches from the place of its attachment to the wood; they are round, and a little flattened at the end, and about the size of the Meunier; the juice which they yield is of the richest quality; the skin is replete with a violet colored matter, which imparts to the wine a shade equal to the Tinto Madeira, which last it resembles as well in taste as appearance. For the purpose of making wine, this is hardly to be excelled by any foreign variety."

This vine thrives in any soil, but the richer the finer will be the fruit; it bears culture with the plough or hoe, as well as the Indian corn, and we may as confidently look for a return to our labor as from that article; it is not at all subject to mildew, rot, or any other casuality of the season, and the possession of this variety does away the necessity of farther experiment, as relates to foreign vines, combining all the excellencies we require, as well for the table as the press. I am confident that even *the climate of England would yield the fruit in great perfection, and that the French cultivators would most willingly introduce it into their vineyards* to the exclusion of many others they now possess. It is no doubt to *become a national benefit,* and will at no distant day, clothe with rich clusters, many of our fields, which for years past have remained barren and worthless.—During the present unfavorable season, it maintains its character. and holds out to the farmer a certainty that his field will be far more productive to him in wine than in any other culture to which he can subject them. The originator of the vine, I understand, is willing to part with some thousands of the cuttings the approaching season, and I would recom-

mend all who wish to venture in the culture of the grape, to possess themselves of so valuable a prize.

After selecting the foregoing piece for publication, we met with the following opposite opinion expressed in the American Farmer of Sept. 20th, and which propriety requires that we should also insert. The passage is editorial. The grapes on which this judgment is passed were raised in Pennsylvania.

[*Ed. Far. Reg.*

And lastly, a specimen of *Norton's Virginia seedling*. In this latter grape we are very much disappointed. We had heard it highly spoken of, and in our last number we copied an article from the Richmond Whig, which extolled it highly, and we therefore deem it incumbent upon us to speak of the grape as we find it. It certainly is very inferior to many other native grapes. The berry is round, black, $\frac{3}{8}$ of an inch in diameter. The bunch small, berries loosely set, flavor a brisk but pleasant acid, not foxy; slightly pulpy. It does not appear to contain a sufficiency of saccharine matter to authorize its being called either a wine or a table grape of much value. If the specimen before us is a fair one, and if the climate of Pennsylvania where it grew, has not made a wonderful change in it for the worse, we are compelled to say it has been very much overrated.

REAPING MACHINE.

From the Lexington Union.

We have omitted until now to furnish our agricultural friends with an account of a machine for cutting grain, invented by one of our ingenious and respectable countymen, Mr. Cyrus H. McCormick, and which we witnessed operating in a field of grain during last harvest in the neighborhood of this place. A large crowd of citizens were present at the trial of it, and although the machine (it being the first) was not as perfectly made as the plan is susceptible of, yet we believe it gave general satisfaction. We have been furnished with some certificates from several of our intelligent farmers, which we have appended to the following description of the invention.

This machine is so constructed as to leave a long or a short stubble, to operate alike well on tall or short grain. It is drawn by one horse walking by the side of the grain in shafts—just behind is a wheel about 2 feet 3 inches in diameter, which runs on the ground, by which the machinery is operated—having a cog-wheel with 40 cogs screwed to it. There is a small wheel (with 9 cogs) working in that, having another on the same shaft with 28, which works another small one, turning a small crank, behind the wheel, and from this crank the knife receives a vibratory motion. It is about $4\frac{1}{2}$ feet long, with an edge somewhat like that of a sickle (having teeth,) straight and projecting into the grain at right angles to the horse. Behind the knife is an apron 5 or 6 feet long, of thin plank: and this frame connects with, and is made fast to the frame which supports the main wheel—having a slide, or small wheel under it to support it, say about 5 feet from the main wheel. Along side the apron, by the point of the knife, and extending some distance before the knife, is raised a partition of cloth for the purpose of dividing and keeping separate the cut grain from that which is left standing. Then is a reel, as it is termed, which is about 6 or 7 feet in diameter, and the same length of the knife—This is made by framing arms in each end of a shaft, say 8, the points of which are joined together by pieces, called ribs, parallel to the shafts,—The reel is revolved as the machine advances by a band from the main wheel to one on its shaft, the object of which is to draw the grain back to the knife, which will be done whether straight or tangled, upright or leaning, unless below an angle of 45°, and to throw it on the apron. When a sufficient quantity shall have been collected for a sheaf, the hand who attends it, draws it off the apron with a rake. The grain is prevented from slipping with the edge of the knife by pieces of wire projecting before it within 1 or 2 inches of each other.

I certify that, having used one of Mr. McCormick's Reaping Machines on my farm, I can assert that the Machine performs well on level, and on steep land which is smooth, and that it will cut one acre per hour. ARCH'D. WALKER.

July 18, 1833.

I certify that Mr. Cyrus McCormick's Reaping Machine, with a horse, was employed by me in the late harvest, and though I did not work it much, I was satisfied with its work. I tried it for an hour, and calculated what it would do for a day and found that it would cut in a day about 12 acres. I done so more than once. The present year was unfavorable for the trial, as the wheat was lodged in the field. I was so satisfied that I bought one. This preparation was necessary: the ground must be clean—free from stumps and large stones.

JAMES M'DOWELL.

July 18, 1833.

I have seen Mr. Cyrus H. McCormick's Grain-cutting Machine in operation for two seasons—it cut for me this season. I think it will perform well where the ground is clear of rocks and stumps; and will be a great saving of hand labor, and can be so constructed as to cut much wider than at present, and I think it well worth the attention of the public. I think it will cut about twelve acres per day, by being well attended.

JOHN WEIR.

ON THE CULTURE OF ONIONS.

From the Genesee Farmer.

I have raised onions for several years in succession on the same bed; but I have had none so fine as those of the present season. The kind which I have cultivated is called 'the top onion;' and my former practice was to keep the 'sets' over winter and plant them out in the spring. Last fall I adopted a different method. Instead of stowing them away in the house, I set them out at once, and found them to winter best in the garden. I am satisfied, however, that they ought to be well rooted before the approach of severe weather; and this year, I intend to have them in the ground before this note can appear in the Genesee Farmer.

I have planted 'the top onion' in clumps, and also at different distances. Those that grew close together, have in no case been so fine as those that stood three or four inches apart. The bulbs in the *head* ought to be always separated before planting.

By planting early in autumn, onions will be fit for use the next season, a month or two sooner than if planted in the spring,—which is a great convenience.

Some have insisted that a rotation of crops ought to include onions; while others have been satisfied to sow or plant them, year after year, on the same ground. In favor of the latter practice, it may be remarked that onions require a soil rather different from common vegetables,—that is to say, *shallow* but *rich*; and one piece of ground so appropriated can be most conveniently kept in that state, for as soon as the crop is taken off, it may be manured, well hoed, raked over, marked out, and planted again without delay. And that such lands do not deteriorate, is evident from the fact that with a very slight dressing, the crops have been found successively to increase. The crop that gained the premium of the Massachusetts Agricultural Society in 1830, was estimated at 657 bushels; and it grew on an acre which had been cultivated with onions several years.

'The top onions' is only a variety of the common kind, and some bear bulbs, some seeds, and occasionally I find one which bears both bulbs and seeds. I destroy the young stems when there are too many shooting up through the patch; but if they are not destroyed, they will produce tolerable onions. When I gather the crop, I take up all together, separating the onions from the stems.

A PRACTICAL GARDENER.

A CHEAP STUMP MACHINE.

From the Genesee Farmer.

My neighbor W., in Warren Co., has a very valuable Patent Stump Machine, with which he extracts the largest stumps, and places them side by side so as to form a durable fence. But as his Patent Machine costs so much that every farmer cannot or will not procure one; I propose to recommend one of a cheaper and humbler kind, which every farmer may have without paying for a patent-right—and which he may find useful in ridding his fields of a great obstruction.

Procure a white-oak log about 8 or 9 inches in diameter, 30 or 40 feet long, let it season for a year. Having chopped some of the roots of the stump preparatory as usual to taking it out, lay one end of the log against the side of the stump, and chain it fast with a large log chain,—with a pair of oxen at the other end, stumps of common size are easily taken out; making the stump itself the fulcrum, and operating in the same manner that surgeon's pullicans do in drawing teeth.

This experiment is easily made, without any unusual or extra expense—and although it is not so powerful as the patent machine, yet its power is very far beyond the rail in the hands of a man, which I am surprised to see still in use.

MEADVILLE.

August 3d, 1833.

CATERPILLAR BRUSH.

From the Genesee Farmer.

August 23. Sent John at 3 P. M. yesterday, to destroy the caterpillars upon my fruit trees, which had become numerous and unsightly, with my Pickering brush. He came in at eleven today, and told me he had gone through the orchards and destroyed about 500 webs or nests. This is not far from the truth, as the trees number nearly 500, and the nests averaged one to each tree. The brush is made expressly for the purpose, is conical, about 8 inches long, tapering to a point at the apex, and presenting an exterior of short stiff bristles. Being fixed to the end of a pole, it is thrust into the caterpillar's nest, and being turned, collects the entire web with its inmates, which are then readily separated from the brush and destroyed. The brush was recommended by the late T. Pickering, and cost me fifty cents, at Thorburn's seed store.

TO YOUNG HOP GROWERS.

From the Amherst Cabinet.

The most common fault with hops at the time of inspection is their want of strength. In most cases, when hops are marked down by the inspector, the difficulty lies not so much in a bad flavor, as in the want of a sufficient quantity of that aromatic fragrance peculiar to this vegetable, and which is a sure sign of strength and excellence. Hops deficient in strength are, when rubbed in the hand, generally accompanied with a dry, chaffy appearance. The volatile oil, which appears to be the last thing that enters the ovary, (or fruit,) and which yields the fine flavor, and without which the hop is good for nothing, is not there in any considerable quantity. This deficiency in oil, and consequent deficiency in strength and smell, may arise from three causes. The first is, *picking too early*, and before the hop is matured or ripe. Hops picked as soon as they are grown are worth nothing. At that stage, instead of the fruit being saturated with its own volatile oil, as the first sort of hops must be, that oil is only beginning to be elaborated from the sap. The second cause of the want of strength arises from *over-drying*. Hops that are perfectly dry and mature, and when picked from the poles are of the first quality, are sometimes dried to seconds or refuse. In that case the oil is dissipated in the air by heat. I am satisfied of this, for I have seen the operation performed in my own hop-house more than once. I have seen good hops dried until the oil was chiefly expelled, and they would rub into chaff and yield but little fragrance. This may be done without burning them, or a change of color. The third cause of weak hops may sometimes, though I think rarely, arise from *nature*. I saw a few bales last year grown by some of our most judicious and experienced planters, which were feeble; yet, in all probability, were picked at the right time and cured in the best style. If in some few cases the deficiency of strength arises from causes beyond the control of man, yet generally the planter need not look beyond himself for the ground work of seconds and refuse. If hops be kilned scantily, care should be taken to shovel over the heap once a-day for a few days, and occasionaly to examine them down at the bottom. In 1832, hops picked the second week, *i. e.*, after the 10th of September, were better than those of the first week. Hops may be bad, also, from dirty picking, and various other causes. In brief, *take care not to pick too early nor dry too much.*

STEPHEN PEABODY.

Milford, August 15, 1833.

INCREASING THE RAPIDITY OF BOATS,

Without using more propelling power—Explained on scientific principles.

[From the New-York Evening Post.]

Some notice of a discovery recently made in England, with respect to the degree of power requisite to draw or impel a boat or other vessel on the surface of water, has already appeared in this paper. This subject has excited much attention in England, as might naturally be supposed, when it is considered that the yearly income from canals in the United Kingdom amounts to two millions of pounds sterling. Mr. Macneill of London, has recently published a book detailing a series of experiments, made with a view to try the soundness of the opinions hitherto received on this subject, and giving the results of his inquiries, with tables of the degree of force which he found necessary to draw a boat on the surface of water at different given velocities. The conclusion to which he has arrived is that the old theory, by which the resistance to a boat moving on water is supposed to increase in the duplicate ratio of the velocity of the boat, however, it may be true in regard to low velocities, as for example, under five miles and a half an hour, is not true as applied to the higher velocities. He remarks, that "it is not necessary to consider the old law of the squares to be incorrectly stated. In so far as the boat remains immersed in the water to the same water-line, that law may be correct; but whenever the velocity of the boat is increased beyond a certain point, the boat emerges out of the water, and skims near the surface, the traverse section of immersion being lessened."—The experiments made in London have not been unnoticed in this country; and as the successful application of Mr. Macneill's new principle, obviously must depend on the form of the boat, we understand that some attempts are making to construct the steamboat in such a manner as to take advantage of this tendency to emerge from the water when in rapid motion. From a notice of Mr. Macneill's book, which we find in a late English periodical, we copy the following passage relating to this part of the subject:

"It has often been asserted, that such advantages as we contend arise from the boat's emerging from the water at high velocities, have never been attained by boats 'with a power in them;' for instance, by such as a rowboat or a steamboat.—With regard to the first of these, the rowboat, we can venture a sufficient reason for such having hitherto been a just remark. When the boatman is rowing his boat, with his face to the stern, by which position he is enabled to bring all the muscles of his legs to his aid, the antagonist muscles, flexors and extensors, are so caused to balance or counteract each other, that his body is for a part of the stroke, not on the seat of the boat, but suspended as it were by a muscular rigidity, very much upon the heels. When, however, the blade of the oar has passed astern of the row-locks, and the intensity of muscular force is relaxed, the boatman seats himself with a thump, which, together with the resistance met with when lifting the oar, invariably dips the bow of the boat deeper, and so prevents her emerging from the water. With very little attention to a boat when rowed upon smooth water, she may be seen to act in this manner; and oscillation will be perceived to a very considerable extent, occasioned by this shifting of the centre of gravity, not merely in short skiffs, but in the longest wherries or galleos on the Thames, at every stroke of the oars. In the case of steamboats, it is also clearly to be seen, that no attempt has been made to cause an emergence from the water. The improved speed of steamers within twenty years, has its foundation in the improved character of the machinery, and in the elongation and sharpening of the bows, but it has not been in any instance by attempting to draw less water in proportion to her increased velocity."

Mr. Macneill, from these and the other considerations adduced in his book, draws the conclusion that navigation, whether by traction or by impulsion of the oar and the paddle, is yet in its infancy. The attention of the shipwright, he remarks, has hitherto been directed to giving the vessel velocity *through* the water; but he confidently anticipates the time "when the velocity already gained, being aided by the advantage of decreased draught, and the vessel being forced *over* the water, safety and comfort will be the only limit of nautical science." The following is his general reasoning on the subject of the principle he attempts to establish:

"The object immediately in view, when we place a boat or barge upon water, is a good conveyance for persons and property. So is it when we place a wheeled carriage upon a gravelled road, or a sledge upon snow. The difference, however, in the modes of attaining this object, has been most striking. In each of these cases, the body to be removed has rested on soft or yielding matter, and whilst, in the two latter cases, no mechanician would provide for the wheels of the carriage, or the runners of the sledge, a facility for cutting along, immersed in the softer matter under them, the boat-builder seems to have studied how he could best keep his vessel ploughing her way. The case may be different with sea-going vessels, which are impelled by the action of a wind 'on the beam,' and ships of war, with their decks loaded with weighty guns; in such cases it is necessary that the vessel be a good deal immersed. Nor can it be satisfactorily shown that even sea-going ships would not be improved by such a build as would enable them to rise to the surface of the water. But to pursue our *reductio ad absurdum*, there are many cases in navigation where a sharp 'cutwater' shape to a boat would be as unphilosophical, as a knife-edged fellow would be to a wheel intended for ploughed land. A cart-wheel, on gravel or other yielding matter, sinks to the determined line of gravitation with as much certainty as will a boat upon water; and a boat resting in water will (according to the velocity given to it, and the form of its prow and bottom) rise nearer the surface of the water, as well as a cart-wheel will rise, when put rapidly into motion. The difference of density is, no doubt, much greater in one case than in the other, but the water will resist the penetration of the boat in the same manner, though not in the same degree, as the soft gravel or mould resists the wheel. Notwithstanding a conclusion so obvious to those who know the laws of gravitation and the properties of matter—so easily calculated by every one who understands any thing of the combination of forces, we find it has been neglected, in order to determine what law regulates the movement of a body immersed to the same depth, at all velocities.

"At a time when it was generally held that the resistance to a vessel in the water increased in the duplicate ratio of the velocity of the vessel through the water, the now keenly contested merits of railway transport, and canal transport, were brought under discussion. Experiments were instituted in order to confirm this law of resistance, but it occurred to none of the experimentalists that although they could not increase the density of the water, or consolidate it, as has been done with roads for carriages, that they could still increase the relative resistance of water, by giving the boat such velocity that her prow could not penetrate fast enough, and thus that she should rise out of the fluid. They might have reasoned, by a perfectly fair analogy between conveyance on land or on snow, and conveyance on water, and have legitimately concluded, that, as their object was not to cut through gravel, but to get on it, in the one case, so at high velocities in the other, they should not have endeavored only to cut through the water, but also to raise the boat to the surface, and make her skim thereon.

"Such facts are obvious to all, who have seen a boy make a thin stone skim the surface of a lake; who have watched the action of a cannon ball on the smooth sea; who have felt the difficulty of making any impression upon the stream forced from the small aperture of a fire engine hose pipe, or, indeed, who know any thing of the properties of matter."

NAVIGATION OF NOTTOWAY RIVER.

From the Petersburg Intelligencer.

Our readers may remember that, during the last winter, the legislature ordered a survey of the Nottoway river, from its highest navigable point to its intersection with the Petersburg Rail Road. We published some weeks ago the report of a party of gentlemen, who had explored the river in a large boat, and whose experiment afforded proof of the entire practicability of removing all obstructions to its navigation. Since that period, an intelligent engineer has been engaged, under the authority of the board of public works, in making a critical survey of the river, to whose politeness we are indebted for the annexed results of his labors. Mr. Thompson has described so clearly the advantages of this improvement, and the facility with which they may be realized, that we cannot believe that the planters on the Nottoway will any longer hesitate to take the necessary steps to insure the completion of a work in which they have so deep an interest.

Petersburg, Aug. 21, 1833.

Gentlemen,—It is with pleasure I comply with the request to furnish you with the result of the survey and estimate for the contemplated improvement of the Nottoway river, from the Great Falls to the Rail Road, a distance of 66 miles 613 yards: in which distance it flows through one of the richest and most fertile sections of country in the state of Virginia—and from the smallness of the amount required to open a useful navigation, and afford the planters in that section an easy, cheap, and expeditious mode of getting their produce to market, would lead to the hope that the work would be immediately and vigorously commenced, the advantages of which are almost incalculable, when compared with their present tardy mode of transportation over a wretched road, requiring twenty per cent. of the actual value of the article to land it at a market.

There are 25 miles of slack-water navigation on the river, occasioned by the different mill-dams, which are probably rather an advantage than an injury, as they back the water over many shoals and falls in that distance. The locks are supposed 60 feet long, 8 feet wide, built of wood—sustained by dry walls, where the strength of the current or other circumstances may render it necessary; they last, under ordinary circumstances, from 8 to 10 years: when the increased amount of produce will, no doubt, warrant a more permanent structure.—The river (independent of the locks in the different dams) will only require cleaning out, and occasionally wing dams to deepen the water on the shoals; the total cost of which is $29,406.

In a communication from gentlemen *above* the forks of Nottoway, they state, that in the event of the river being made navigable, from that section of country alone they can send 2,000 hogsheads of tobacco, and 60,000 bushels of wheat. From the forks to the rail road, a distance of 56 miles, there is an exceedingly fertile country, which would add largely to the above amount—with a yearly increase on the whole amount from the increased facilities of transportation; which would seem to place beyond all doubt a handsome interest on the investment. At the very lowest calculation the saving to the planter will exceed 50 per cent. on the present cost of wagoning his tobacco, and on wheat in a much greater proportion.

Your obedient servant,

W. B. Thompson.

THE CHEAT [OR CHESS] CONTROVERSY.

We laid before our readers in No. 2, (page 83,) the details of an experiment, the object of which was to test the origin of cheat by undoubted facts: and the result of that trial was clearly against the prevailing opinion, that cheat plants are produced from wheat. It was not expected that those facts would carry conviction to many whose belief was fixed in a different opinion: but it was hoped that the publication would induce the making of other careful and accurate experiments, and serve to establish truth by facts, ascertained by various persons of opposite prepossessions, on this subject. The time of year has arrived for such trials to be made—and we invite believers in the transformation to try, in every variety of process and exposure, to produce a plant either of cheat or spelt from the undoubted seed of wheat. If the change is in truth so frequently made in our fields, and may be produced there by any one of so many different causes, as is generally supposed, surely it cannot be difficult to effect a like change by design, and to trace and prove the progress, from the depositing the *wheat seed*, to the gathering of the *cheat product*.

In the mean time, we present the following articles, which severally maintain the opposite sides of this question, Mr. Ramsdell relies also on facts obtained by experiments, to establish his cause; but strong as they may appear, they were not determined in a manner so accurate as to leave no doubts. But we yield the task of commenting on his letter to his intelligent coun-

tryman, David Thomas of Cayuga county, whose remarks will follow.—[*Ed. Farm. Reg.*

CHESS [OR CHEAT] PRODUCED FROM WHEAT.

From the Genesee Farmer.

"He that is first in his own cause seemeth right; but his neighbor cometh afterward and proveth him, (or setteth him right.)"

Notwithstanding the subject of wheat turning to chess, has been hammered over and hammer hardened, the rust seems to cleave to it yet, as I perceive by some late notices in the Farmer. It appears, I will allow, that the communications are heterodoxical. As much strength will be derived from Heman Chapin's experiment, I shall first endeavor by sound philosophy to convince the public mind, that his process was not agreeable to direction, inasmuch as he cleaned the wheat instead of planting the heads. Suffice it also to state farther, that I took the wheat heads from the north side of a stack, and the west side of the barn, where I suppose the wheat had been kept in a moist state, and so excluded from the sun, in such a manner as not to dry or shrink at all. This is the manner in which I account for the wheat not turning to chess.

I shall now proceed to give a true statement of my own experiments. I took from a small lot, wherenothing had been suffered to tread the ground after harvest, enough wheat heads to plant eight hills, every one of which produced chess, except one, which produced two straws of wheat and the remainder chess; those are spoken of by my friend Mead Atwater. In the next place, I sent one of my hired men, in whom I have the utmost confidence, who gathered and cleaned in the best manner about half a pint of wheat, which was sown in a clean place where other wheat was on three sides of it, with a void place on one side, twenty rods in length, and six feet wide; this location was chosen to cheat the pigeons if they came to exchange commodities. This lot contains five acres, and is nearly clean from chess; the seed was ploughed in carefully, and dragged in the best manner afterward. That which my hired man sowed, was carefully hoed in, and nearly one half of it turned to chess, while the surrounding wheat is nearly clean.

I also sowed of the same seed as the five acre lot above mentioned, a lot of three acres after wheat. The ground was nearly clean from chess, but a plenty of wheat and wheat heads was buried in with the plough, and the seed sown and well harrowed in. The field now is one fourth chess, and in addition, there is a breadth of about two rods in width extending triangularly through the field, which is three fourths chess, caused by the waters overflowing late last spring, and remaining so long as to kill the wheat, so much as to turn it a whitish color; the top of course decayed, while the root remained and vegetable life sprang up anew and produced a large growth of chess. Another mode of management, producing chess, was, the cutting off a piece of wheat after it could be ascertained with certainty by examination, that it was wheat vegetation rose up from these roots and produced nothing but chess. Some of these chess stalks growed upon the side of the old wheat stalk more than one inch from the surface of the earth, resembling a young shoot from the bud, after the old stock is cut off. This is the crop which the farmer would reap, by feeding his field late to prevent its lodging down. Furthermore, the half acre sown by Ambrose Burr upon new burnt land with entirely clean seed, has brought forth chess enough to seed one fourth part of it again, if chess would yield chess as spontaneously as wheat does.

I also planted one head of chess, which has borne chess of the size of caraway seed; which I intend sowing this fall, but do not apprehend any seed another year.

Thus I have raised chess in four different ways, and have a fifth one on trial; the result will be given hereafter, when sufficiently tested. All the specimens will be preserved for future inspection.

I have observed, to my satisfaction, that the chess from rye, even when sown on our poorest land, grows much higher than the wheat chess, although the wheat is sown on good ground; and the flax chess, although sown on the richest of land, will not grow higher than flax. I want every farmer to take particular notice how completely they preserve the stature of their respective legitimate fathers, as much so as the human species or brute creation. I think D. T. is under another mistake. As to those doing more good in the economy of wheat-raising, who pull the chess out of their fields, than those who do not sow wheat after wheat, prepare their seed and ground in a proper manner, put the crop in well, and in good season too, I shall leave for the farmer to determine. If by observing the above, is a preventive of seven-eighths of the quantity of chess usually grown; then, I see no necessity of continuing to raise this surplus quantity, for the sake of pulling it up again—*a penny saved is worth two earned.*

The remark made by my good friend David Thomas, that my allusions were too personal, I do not admit, and would be very happy, in a private conversation, to convince him that I only intended to give two shillings for twenty-five cents, *honest measure.* I still acknowledge his superior talents, and that he makes but very few mistakes.

GIDEON RAMSDELL.

Perrinton, 7th month, 1833.

CHESS—RESULT OF EXPERIMENTS.

From the Genesee Farmer.

If the notion of wheat turning into chess, was purely speculative, like another notion which has also been prevalent, to wit; that *swallows winter in the mud under water*, a few remarks on its extravagance would be sufficient, and both might be quietly consigned to oblivion. The believers in the spurious origin of chess, however, practice what they preach. They are confident that pure wheat will generate the nuisance; and this being a law of nature, not to be abrogated, they submit to have their fields overrun without making the exertions necessary to prevent it.

It must therefore be evident that to exterminate it from our country, that portion of our farmers must be induced to view chess in a different light; and to consider it nothing but a *weed*, independent in its nature, not indebted to any other plant for its existence, and only growing from its own seed. If some of them should prove dull or intractable scholars, we ought not to be discouraged, nor grow weary of well doing. We are evidently gaining ground. Every sophism, every trait of false logic that we detect and expose, must discountenance or diminish their party; and if some of our readers,

who take no interest in the matter, are oppressed by languor, I hope they will turn to other amusements, and be too polite to yawn in our presence.

I have said that we are gaining ground. In Virginia this subject has been investigated in a manner deserving of great praise; and if our opponents, in their experiments of the ensuing season will adopt the same plain and philosophical method, this long controversy will doubtless soon be brought to a satisfactory termination.

Thomas Cocke and *Edmund Ruffin*, of opposite opinions on the origin of chess, in company with *William J. Cocke*, who was undecided, selected a clean piece of hard wet ground, and marked it out in right lines, planting a few small or shrivelled grains of wheat, such as is supposed to turn into chess,—at measured distances. A small spot adjoining was strewed broad cast with similar defective seed. In the spring, it was found that only a part of these seeds had germinated, so very imperfect was their quality; and as a further test, some of these plants were cut down within an inch of the ground. The parties say "It was our design in this experiment to bring into operation every cause to which this change is usually ascribed by different persons, namely, 1. Imperfect seed. 2. Thick sowing. 3. A wet soil. 4. Hard or unbroken soil. 5. Grazing or mowing." No transmutation however was effected by any [or all] of these *five* causes. At harvest there stood the wheat, and not one stalk of chess in the whole patch.

Now contrast this experiment with *Gideon Ramsdell's*. He appears not to have taken any of his opponents into counsel, but to have chosen his own ground. Whether that on which he raised the hills of chess, was clean or not, he has not thought it necessary to say,—perhaps like some of his associates in that notion, not deeming it of any consequence. Plough Jogger says, "The man that sows clean seed wheat, and in time of harvest finds one fourth, or one half of it chess, knows for a certain that wheat will turn to chess." That is drawing a conclusion from only half of the premises. G. R. does the same: he admits that the lot in which his hired man sowed damaged wheat, was *not quite* but only "*nearly* clean;" and because chess grew there, he confidently assumes that it sprung from the wheat.

It is worthy of remark that the more carelessly our opponents conduct their experiments, the more likely they are to succeed. I do not impeach their honesty; but to every mind that has been disciplined in the rigorous inductions of modern philosophy, it must be evident that such experiments are not entitled to our confidence.

There is nothing new in the circumstance that a stubble field of wheat has produced chess; and it has been explained on former occasions. The plant mutilated by G. R. has not been shown to have been wheat: we have neither proof nor detail of that "certainty." Last spring, one of the best farmers in our country, found a head of wheat which had sprouted, and he was confident the plants were chess, thinking he knew them by the leaves; but Dr. *Charles Yoan* of Springport, planted them in his garden, and these proved at harvest to be genuine wheat. It also appears from the experiments in Virginia, that wheat plants cut off near the ground, sprouted anew and produced wheat.

The evidence in regard to the field of *Ambrose Burr*, is not less defective. Newly burnt land and clean seed will not imply that no chess was dropped on it by his team in seeding time, or by his live stock in winter, without adverting to other causes.

I planted one seed of genuine chess in my garden last fall which produced this season seven stalks, the largest four feet high, and yielded more than two thousand two hundred seeds. This result is very different from G. R.'s experiment.

If both rye and flax turn into two other kinds of chess in one district, they must occasionally undergo similar changes in other districts. Yet no botanist has found any such plants; and G. R. cannot be accredited with this discovery till a decision in his favor be made by some competent person. In this quarter, we have only one kind, the common chess, growing indifferently both among wheat and rye.

The manner in which G. R. attempts to explain the result of *H. Chapin's* experiment, is very unsatisfactory. "His process was not agreeable to direction inasmuch as *he cleaned the wheat instead of planting the heads.*" I cannot see why old chaff should turn wheat into chess, merely by being in contact, any more than old brown paper would turn it. That was drawing too hard on our credulity.

When chess infests a farm, it is more difficult to exterminate than some imagine, owing to the various ways, already mentioned, in which it may be scattered over the fields and meadows; and especially when it is closely surrounded by other farms that are foul with this weed. *Noah Dennis* has used all reasonable means to destroy it; he has cleaned his seed wheat, and carefully pulled it up in his fields; and year after year he has found it scarcer, yet a little still gets in. Not being well enough to be out in harvest, he requested one of his men to take notice if any chess occurred; and in half a day he found only one plant. This fact I respectfully submit to the candid consideration of G. R. and of those who unite with him in opinion. It will be hard to explain on *their* principles, but very easy on *ours*. That regular diminution of the weed is just such a result as we know would follow a spirited attack on the Canada thistles that infest so many farms: they would grow scarcer every year; but a few seeds coming from the neighbors would render a strict watch necessary. If Canada thistles however, originated from clover and timothy every time that the first was thrown out by frost, or the latter eaten down, there could be no regular gradation about it. One unfavorable winter, or one visit from trespassing cattle, would disannul all our previous labors. Providentially things are not so, either in regard to chess or to thistles; and the farmer may go on with full assurance that nature is not so wild and unmanageable as our opponents imagine.

In a former article, G. R. has said, "Uncovered wheat will always produce chess *as a natural consequence.*" On this point also, he is mistaken. My friend *John Brotherton*, whose veracity will not be questioned, lately informed me that a few years ago, he observed a lot of stubble near his house, some time in autumn, becoming green from the wheat dropped in harvesting; and he concluded to save it for a crop. The ground was neither ploughed, harrowed, nor cultivated in any other manner whatever; and some of his neighbors were

positive it would all turn to chess; but not being troubled with that notion, he took his own course. The piece contained two acres wanting fifteen rods, and at harvest he had forty-four bushels of good wheat. D. T.

Greatfield, Cayuga Co., 9 mo. 2, 1833.

THE ROT IN TIMBER.

From the Genesee Farmer.

A preventive seems to have been discovered of the rot, particularly the dry rot, in wood, which promises to be of the greatest advantage in naval architecture. It consists in applying to the wood a solution of deuto-chloride of mercury (corrosive sublimate) which arrests the natural process of decomposition, by combining with the albumen, (the latent element of vitality, and the cause of decay) whether an active or dormant state, and *killing it.* The expense of the application is said to the comparatively trifling. The extract which we subjoin, from the Quarterly Review, will show the principles upon which the discovery is based, and the tests of its efficacy.

"The theory may be considered as founded on the great truth thus succinctly stated by Fourcroy: 'The aim of nature in exciting fermentation, is to render more simple the compounds formed by vegetation and animalization, and to employ them in new combinations.' Mr. Knowles, in commenting on Fourcroy's dictum, says:

"Thus is the great law of nature fulfilled, that the death of one body shall give life to others. When the animal dies, and fermentation takes place, flies deposite their eggs, maggots are formed, and the fleshy parts are destroyed; when the vegetable body falls, it is eaten by worms of another kind, or destroyed by fungi; and if, in consequence of the employment of art, the duration of either is extended, that slow but sure destroyer, Time, at length renders them to their native earth, to serve in their turn for nutriment to others."

In the next paragraph Mr. Knowles advances another and a very important step:

"When an animal or vegetable body is deprived of *life*, the very principles which were the causes of its nutriment become the means of its decay. To bring about decomposition the same agents are necessary as to promote vegetation,—air, heat and moisture, under proper modifications and combinations. In a vegetable body, when the fermentation process begins, the vessels or fibres of which it is composed are put in motion; a separation of them takes place; the volume is consequently enlarged, and it generally suffers an alteration in color. As the process advances towards putrefaction, heat is evolved, and carbonic gas is disengaged."

The Quarterly proceeds:

"In the germination, which converts the acorn into the oak, and in the putrefaction which reduces the felled tree to a bed of fungi, or a hive of insects,—the same great vegetative principle is at work. Vegetable albumen (combined, in various proportions, with farinaceous, mucilaginous and saccharine matter,) is the primary constituent of every seed. When exposed to atmospheric air, under a certain temperature,—not lower than 32° nor higher than 100°, Fahrenheit,—the germinating power is brought into action, and the seed becomes a tree. The first year's growth forms the pith, the alburnum and the bark; in the following year or years, the pith becomes heartwood, and when *that* is formed, every preceding year adds another concentric layer of alburnum, which in its turn ultimately becomes heart-wood. The bark has an expansive growing power, so as to admit the yearly extension of the alburnum; but it has also a strong compressive energy, expelling moisture from the layers that successively assume the character of heart-wood—but *not* expelling the vegetable albumen, which, squeezed into a concrete form, remains shut up in the interstices, even to the very centre of the tree. The active vitality of the tree is in the alburnum, through the vessels of which, perpendicularly, and also laterally, the sap ascends and circulates; but the principle of vitality—the albumen of the parent seed—continues to be present, though dormant, in the compact tissue of the heart of oak; and capable, even after the lapse of centuries, during which it has been preserved from the action of air and moisture, of exhibiting its vegetative power on being exposed to these influences."

It is by destroying this latent element of vitality in the central body of the tree—of extirpating the dormant life of the concrete albumen, that the process of decay is arrested. Sir Humphrey Davy first suggested the sublimate as the antidote, but had his doubts whether the application would not subsequently prove deleterious to human health. Mr. Faraday has subsequently made a course of experiments, in the dockyards at London and Woolwich, which seem to demonstrate the efficiency of the application, and that the mercury is neutralized, and rendered innoxious, by its chemical union with the albumen of the wood. The following exhibits one of the tests:

"The 'fungus pit' at Woolwich is a subterraneous chamber lined with wood in the worst possible state of corruption: it is kept extremely damp, generates carbonic acid gas in profusion, and in short, forms, as its name implies, a perfect hotbed for the growth of all those fungi that used to be considered as the causes, but which are only the most usual symptoms, of dry-rot. It is a proverb among the people of the dockyard, that a month in *the hole* is worse for a bit of timber, than ten years in almost any possible situation out of it. We have ourselves visited this noxious place, and seen an hour and a half elapse, after opening the trap-door, before a candle would burn six inches beneath the surface. Blocks of timber—oak, elm, pine, beech, &c.—prepared with the solution of sublimate, have now, as Mr. Faraday said, and as the printed documents before us prove distinctly, stood the test of the fungus pit, without exhibiting the slightest symptom of decay, during no less a period some of them than *five years;* and these, instead of being insulated by means of some heterogeneous substance, hath been lying on the fungus spread floor of the dungeon, each with an unmedicated fragment of the very same tree, and of the like bulk, close by its side—every one of which unprepared pieces was found at the opening of the pit in rapid progress of decomposition."

Medicated timber was found to resist the action of dropping eaves, during a course of time sufficient to bring utter decay upon unprepared ones similarly exposed. Canvass, and even delicate calico, saturated with the solution, placed in the fungus pit three months, came out entirely sound, while of the unmedicated counterparts, there remained nothing but a few mildewed strings that

fell to pieces at the touch. Oak and pine imbibe about an equal quantity of the solution. A cube containing 216 cubical inches, takes in about five ounces of the liquid. Fir deals take in their quantity in about 48 hours; while a beam of oak is not saturated under a month.

It will readily be perceived, that if this discovery proves to be, what it promises, a means of rendering wood in a measure indestructible, its advantages will not be confined to naval architecture—where, however, its importance will be incalculably great--but will be highly beneficial to most of the arts of life. We deem the subject of so much importance as to warrant our giving to it this brief notice. Those who wish to examine it more in detail are referred to the 9th No. of the London Quarterly, pp. 125, 133, and to the works there referred to. B.

TURNING IN GREEN CROPS FOR MANURE.

From the New England Farmer.

To the Trustees of the Massachusetts Agricultural Society.

I have been induced, partly by the premium you offer, and partly for my own satisfaction, to make some experiments as to the value of green crops ploughed in for manure, and I send you the result.

In the middle of May, 1828, I ploughed up three and a half acres of pasture that had, for many years, been tilled by the former owner, until the crops would not repay the labor. It was a light loam, but not sandy. It had been so reduced, that ten acres did not afford sufficient pasturage for one cow through the season. We sowed immediately after this ploughing, a bushel of buckwheat to the acre, and in six weeks rolled down the buckwheat in the direction we intended to plough, and then ploughed and sowed as before. In the latter part of August we turned in a second crop of buckwheat—having rolled it down flat as at first, and then seeded it with clover, herd's-grass and red-top, one peck and a half to the acre. Most of the clover was winter-killed, and a great part of the herd's-grass and red-top. Early in the spring of 1829, we sowed 10 lbs. of clover-seed to the acre; and with a light harrow, went slowly over the whole. The seed took well, but the clover was not high enough for the scythe, when the other grass was fit to cut. We mowed what had not been winter-killed; and where it yielded best, we obtained one ton of herd's-grass to the acre. Immediately after mowing, we turned in our cattle, and fed the grass close. Last spring, (1830,) the grass was so forward we turned in our cattle on the 19th of April. There were eight acres in the whole field, but there were only five acres that bore any grass worth 50 cents: these five acres were the three and a half managed as I have stated above, and one and a half on which grass-seed was sowed in April, 1830; and fifty bushels of leached ashes mixed with loam, spread on the surface. On these five acres, (and the three which bore nothing,) I pastured four cows constantly for four months, wanting two days, and they had an abundance of feed. I never had any pasture ground yield so well before. I think these green crops improved the land as much as a good dressing of manure, and the comparative expense I estimate as follows, on one acre.

With Manure.	
20 ox cart loads of manure,	$24 00
Hauling ¾ mile and spreading,	5 00
Ploughing once, green sward,	2 00
Harrowing and sowing	1 00
	$32 00

With Green Crops.			
First ploughing, green sward,			$2 00
2d ploughing, and rolling with man and horse,			1 00
3d ploughing, and rolling,	do.	do.	1 00
Three harrowings,	do.	do.	1 00
Two bushels buckwheat,			1 55
Sowing,	do.		25
			$6 80

Thus you will see, that it has cost me less than one-fourth as much to enrich my land with green crops, as it would with manure. If my grass had not been winter killed the first year, I intended to have shown you the precise weight of hay cut on an acre. The above estimate of the cost of manure is less by twelve cents per load, than it can be purchased for in this place. I have given more within two years.

Farmers ought, in duty, to make the trial for themselves. They generally have much land, (miscalled under improvement) ten acres of which will not pasture a cow. Such land usually lies distant from the house. They say they cannot make manure enough for the whole farm, and they find it more profitable to lay their manure on lands nearer home. They do not seem to conceive it possible to enrich them otherwise than with stable manure. If they would plough and sow properly they could make the whole rich.

They further object to growing crops to be ploughed in; for, say they, "the growing crop will exhaust the land as much as it will enrich the same when ploughed in, so that we end where we began." This would be correct reasoning, undoubtedly, if the growing crop obtained its whole sustenance from the ground. It probably does not one-sixth part. It was the knowledge of this principle that gave me confidence of success in the experiment. The advantages of green crops for manure are greater where the lands are distant from the barn, than in other cases.

Respectfully yours,

WM. BUCKMINSTER.

Framingham, Nov. 10, 1830.

ICE HOUSES.

The New York American contains directions from one of its subscribers, "as to the best mode of constructing an ice house that will keep its ice through the season." The method suggested is the one most in use in the neighborhood of Boston, where it has been made a subject of *scientific* inquiry.

Directions.—It must be a tight frame building, and *above* ground, the four sides of which should have an inside lining, fifteen inches apart, the intermediate space filled with tan; the floor, which should be dry ground, covered with the same material to the depth of about 15 inches; the attic should have a board flooring, with a scuttle door for entrance, also covered with tan, say about five to six inches; over the whole, a good *tight* roof, with an entrance to the attic through the gable end.

THE ENCOURAGEMENT OF AGRICULTURE IN NEW YORK—CIRCULAR.

To the General Corresponding Committee of the New York State Agricultural Society, in the several counties of this state:

GENTLEMEN—In February 1832, an association was formed, to improve the condition of our agriculture. It was incorporated by an act of the legislature, the succeeding April, under the name of the "New York State Agricultural Society."

The title, I trust, sufficiently explains its object; and as the field of its labors is to be co-extensive with the bounds of the state, it cannot fail to find in every section of it, persons who will lend their aid in advancing the interests of agriculture, a business in which seven-tenths of our citizens are directly engaged, and to which all owe their prosperity. To make the laborers of the association more effective, they selected and appointed gentlemen in the different counties as a general corresponding committee, who were expected not only to communicate freely, with the parent society, upon subjects connected with agriculture, but to aid in the formation of county societies, which would materially assist the state society in the attainment of its objects. The state society do not presume to act the part of instructers; their great object is to collect and embody the practice, observation and experience of our most intelligent farmers, upon subjects connected with the improvement of husbandry, that they, through the press, may again diffuse the information thus gathered for the benefit of us all. The gentlemen who have been appointed as the corresponding committee in the several counties in this state, we trust have been notified of their respective appointments, and we feel confident they will discharge the duties to which they have been called.

Arguments, surely, cannot now be required to prove the usefulness of agricultural societies. Simply to show what concentration of effort will do to advance important interests, we will point to what Bible, Missionary, and Temperance Societies have already done in aid of the objects they were intended to accomplish. Whilst they are extending their labors to teach and enlighten the moral and religious community, and urge all classes of society to the performance of imperative duties, we farmers, who cherish and sustain all, may at least take this lesson from them to advance the interests of our peculiar vocation. That our cultivated land may, by improvement in husbandry, be made to double, and in many cases to triple its produce, no intelligent man at this day will deny. This result, so desirable, cannot fail to be essentially aided by the labors of the institution we propose; and as direct evidence of their utility, we will quote a portion of a letter of the first president of the State Agricultural Society, who is now in France, to its corresponding secretary, and which may be found in its printed proceedings in February last. He says: "The advantages of these institutions are demonstrated beyond the smallest doubt, by the considerable difference which exists between those parts of the country where they have none, and others where some of the best organized societies have exercised their influence. I could quote some of the finest parts of France, where the establishment of a good Agricultural Society has, within a very few years, doubled the produce of the soil."

In many of the counties in this State, societies are now in successful operation. The coming fall will witness in them the exhibition of domestic products in all of its variety—which, while it will excite to laudable emulation, cannot fail to give an impulse to Agriculture, which must materially improve it. It is hoped that those counties in which societies have not been formed will follow these good examples; and as they successively organize, that they will favor the Corresponding Secretary of the State Society with a copy of their constitution.

J. P. BEEKMAN.
Cor. Sec. N. Y. State Ag. Society.
Kinderhook, (Col. Co.) May 30, 1833.

P. S. The Corresponding Secretary will be happy to receive communications on the subject of agriculture, and a copy of the constitution of those county societies that are organized—if not already sent.

The foregoing circular letter, though addressed to the farmers of New-York, is equally applicable to those of Virginia—and it is *possible*, (though certainly not probable,) that the example of the legislature of our sister State, may not be entirely lost on our own. The measures here announced are but a small part of what have been favorably received as propositions at the last session of the Legislature of New-York and will probably be adopted, more or less modified, at the next. The legislative committees, to whom were referred petitions for aid to Agriculture, recommended the institution of an agricultural seminary, and an appropriation of $100,000 for its endowment—and a general system of agricultural societies, to be maintained at an annual expense to the state of $25,000. When will the Legislature of Vrginia adopt any measure of this kind?—or (it may be more proper, first to ask) when will any member dare to hazard the loss of his popularity, by making such propositions? We do not wish to be considered as the advocates of these particular schemes, (of which indeed we know very little,) or of any which require such large and immediate expenditures. But we cannot too highly applaud the public spirit which prompts these measures, for possessing which, New-York is more to be envied, than for the wealth which enables that spirit to operate. It is not to be expected that the first appropriations for such objects, will be expended in the most judicious or effectual manner; but time and experience will serve to correct early errors and mistakes, and point out the best mode of promoting the great object, the improvement of scientific and practical agriculture.

KANAWHA MARBLE.

"There has been shown us a beautiful specimen of native marble, obtained on the Elk river in his county. It is of a light cream color, interspersed with veins of pure white. Some parts of the piece shown us were transparent, while others were opaque.—It is susceptible of a fine polish. We learn, that it is to be obtained in considerable quantities, the extent not known."—[*Charlestown Banner.*

THE WHEAT INSECT.

From the Vermont Chronicle.

The wheat crop in this vicinity, and if report speaks truly, generally through the whole country, never gave greater promise of abundance, than it has done this season, up to the time this insect commenced its ravages. So far as examination and inquiry have extended, (and we have taken considerable pains to learn the extent of the injury done by them to the crop.) very few fields have entirely escaped the attacks of these insects. Some fields are supposed to be nearly destroyed; while others are affected in a much slighter degree. So far as we can ascertain, the latest sowed wheat is much less infested by them, than that which was earlier sown.

In some fields these insects are numerous almost beyond the reach of the imagination. From five to seven are found in the husk of a single grain and in almost every husk in the ear. This insect is not, as has been described by some, a maggot in the kernel of the grain, and confined to it; but, moves about at pleasure, within the husk of the kernel; and after a shower of rain, they have been seen in such countless numbers on the beards of the wheat, as to give the whole field the color of the insect.

The insect is of a sulphur color, and one-tenth of an inch in length; and through a magnifying glass, its skin appears hard and polished, like that of the wire-worm. It is beyond a doubt, a very different insect from the one denominated the weevil.

It is probably the same species of insect, which is described by Mr. Gorrie in the Quarterly Journal of Agriculture. He says "in May or June, as soon as the temperature rises to 57 or 58 deg., for a week or ten days, the flies begin to appear. If this happens in May, the flies deposit their eggs before the ears of the wheat appear, and are then comparatively harmless; but if the ear which they make their nidus, has burst the sheath before this period, they fix themselves on the glume, and deposit clusters of eggs on the stigma. In nine days after the eggs are deposited, the caterpillars appear fully formed, of a sulphur color, and devour the embryo grain. After the ear is fully developed and about an inch above the sheath, the fly never attempts to deposit its eggs upon it. In three weeks, from the time the eggs are deposited, the maggots disappear from the grain, and burrow in the ground. The damage done by these insects in three years, in the Braes and Carse of Gowrie, was estimated at 400,000 dollars. No remedy has been found for the evil." If the fly, which Gorrie describes, be the same species of insect with these which are now ravaging our fields of wheat, as it certainly appears to be, from its similarity of habits, there is great reason to hope, that late sowing will prove a remedy.

One important fact which goes to sustain this belief is, that several fields of late sowed wheat on examination appeared to be very little damaged. Another, equally important, is, that the latest sowed field of wheat which we examined, and which appeared almost, if not altogether untouched, by this insect, had a sprinkling of rye among it; and this rye, though not the natural or chosen nidus of the insect, was swarming with them. This is to be accounted for, from the fact, that when wheat and rye are sown together, at the same time, the ears of the rye burst the sheath, from ten days, to a fortnight sooner than the wheat. There were probably none of the maggots on the wheat of this field, except what were produced from the eggs originally deposited on the ears of rye, and which might have escaped thence to the ears of wheat on their appearing above the sheath. The most minute observation, however, of the habits of these insects, can alone settle these questions. There can be little doubt, but that a proper knowledge of their habits, instincts, and time of depositing their eggs might enable the farmer greatly to lessen, if not entirely to prevent their ravages.

At our suggestion, a number of farmers in Orange county saved their spring wheat from the worms last year, by late sowing. Winter wheat cannot escape, except by being too early for the worm, and therefore all possible pains should be used to bring it forward.

JEFFERSON COUNTY LAND.

Late sales indicate a just estimate of the value of our lands. The Keys' Ferry tract, on the Shenandoah, lately sold for $64 per acre, at auction; a beautiful farm of 200 acres, with good improvements, a mile and a half south of Charlestown, was lately disposed of at private sale, for $60 per acre; a tract of 225 acres, within a half mile of the Shenandoah, but with scarcely any improvements, brought at auction, $45 per acre; and another, of nearly 200 acres, two miles north-west of town, with ordinary buildings, was knocked off on Monday last, at $43 70, cash. These sales prove, either that there is an intrinsic value in our soil, which our farmers know well how to appreciate, or that the great public works in our vicinity have something to do with the matter. Our readers will perceive that there is still some land in market. A man with a Jefferson farm, clear of debt, and with a clear conscience, need ask or desire no better "home" this side of Jordan's bright fields.

[*Free Press.*

SCOTCH FARMING.

From the Genesee Farmer.

The out-lay in Scotch Farming, or expense of improvement, may be judged of from the following taken from the Farm Reports, published by the society for the diffusion of useful knowledge, and which is given as the actual expense incurred upon a farm in Rosshire:

Twenty-one acre field.

"Blasting large stones,	£75 00 00
Trenching 6½ acres £12 10 per acre	81 5 00
Lime, 3024 bushels, (144 bushels per acre,) at 6½*d.*	81 18 00
Drains,	3 00 00
Inclosing with stone dike,	52 7 00
Average per acre, £13 19*s.* 6*d.*,	£293 10 00"

The labor in carting lime, fallowing, &c., would add £5 per acre to the above expense. This was the most expensive improvement. The least expensive was £6 19*s.* 2*d.* per acre, without estimating team. The pound is $4 44.

B.

CHARACTERISTICS OF FLEMISH HUSBANDRY.

From the Encyclopedia of Agriculture.

To make a farm resemble a garden as nearly as possible, was their principal idea of husbandry.—Such an excellent principle, at first setting out, led them, of course, to undertake the culture of small estates only, which they kept free from weeds, continually turning the ground, and manuring it plentifully and judiciously. Having thus brought the soil to a just degree of cleanliness, health and sweetness, they ventured chiefly upon the culture of the more delicate grasses, as the surest means of acquiring wealth in husbandry, upon a small scale, without the expense of keeping many draught horses or servants. After a few years' experience, they soon found that ten acres of the best vegetables for feeding cattle, properly cultivated, would maintain a larger stock of grazing animals, than forty acres of common farm grass; and the vegetables they chiefly cultivated for this purpose were lucerne, saintfoin, trefoils of most denominations, sweet fenu-greek, (*Trigonella,*) buck and cow-wheat, (*Melampyrum pratense,*) field turnips and spurry, (*Spergula,*) by them called marian-grass.

The political secret of Flemish husbandry was, the letting farms on improvement. Add to this, they di-covered eight or ten new sorts of manures. They were the first among the moderns who ploughed in living crops, for the sake of fertilizing the earth, and confined their sheep at night in large sheds built on purpose, whose floor was covered with sand, or earth, &c. which the shepherd carted away every morning to the compost dung hill. Such was the chief mystery of the Flemish husbandry.

Urine cisterns are formed in the fields, to receive purchased liquid manure; but for that made in the farm-yard, generally in the yard, or under the stables. In the latter case, the urine is conducted from each stall to a common grating, through which it descends into the vault; from thence it is taken up by a pump. In the best regulated farmeries, there is a partition in the cistern, with a valve to admit the contents of the first space into the second, to be preserved there free from the more recent acquisition, age adding considerably to its efficacy. This species of manure is relied on beyond any other, upon all the light soils throughout Flanders, and even upon the strong lands, (originally so rich as to preclude the necessity of manure,) is now coming into great esteem, being considered applicable to most crops and to all varieties of soil.

Fallows, according to Sir John Sinclair, are in a great measure abolished, even on strong land; by means of which produce is increased, and the expense of cultivation on the crops raised in the course of a rotation, necessarily diminished: and by the great profit they derived from their flax and rape or colsat, they can afford to sell all their crops of grain at a lower rate. Notwithstanding this assertion of Sir John, it will be found that a fallow enters into the rotation on all the clayey soils of Flanders.

Flax is cultivated with the utmost care. The field intended for this crop, after two or three ploughings and harrowings, is again ploughed, commencing in the centre and ploughed round and round to the circumference, so as to leave it without any furrow. The heavy roller is drawn across the ploughing by three horses; the liquid manure is then spread equally over the entire surface, and when well harrowed in, by eight or nine strokes of the harrow, the seed is sown, which is also harrowed in by a light harrow with wooden pins, of less than three inches, and the surface, to conclude the operation, is again carefully rolled.

Nothing can exceed the smoothness and cultivated appearance of the fields thus accurately prepared.

The manure universally used for the flax crop demands particular notice. It is termed liquid manure, and consists of the urine of cattle in which rape cake has been dissolved, and in which the *vidanges* conveyed from the privies of the adjoining towns and villages, have also been blended. This manure is gradually collected in subterraneous vaults of brick work, at the verge of the farm next to the main road. These receptacles are generally forty feet long by fourteen wide, and seven or eight feet deep; and in some cases are contrived with the crown of the arch so much below the surface of the ground, as to admit the plough to work over it. An aperture is left in the side, through which the manure is received from the cart by means of a shoot or trough, and at one end an opening is left to bring it up again, by means of a temporary pump which delivers it either into carts or tonneaus.

The liquid is carried to the field in sheets or barrels, according to the distance. Where the cart plies, the manure is carried in a great sheet called a *voile*, closed at the corners by running strings, and secured to the four uprights of the carts; two men, standing one on each side of the cart, scatter it with hollow shovels on the low grounds; or where the tonneaus are made use of, each is carried by two men with poles, and set down at equal intervals across the field, in the line of the rolling.

There are two sets of vessels which enable the men who deposit the loaded ones to bring back the others empty. One man to each vessel, with a scoop, or rather a kind of bowl with a long handle, spreads the manure so as to cover a certain space; and thus by preserving the intervals correctly, they can precisely gauge the quantity for a given extent of surface. For the flax crop they are profuse, and of this liquid mixture in this part of the country, they usually allow at the rate of 2480 gallons, beer measure, to the English acre.

With culinary vegetables the Flemish markets are abundantly supplied. Most of these are grown by the small farmers, and are of excellent quality. To every cottage in Flanders a garden of some description is attached; and according to the means, the leisure, and the skill of the possessor, is rendered more or less productive. The general principles of management with all are, frequent digging, careful weeding, ample manuring, and immediate succession. The rotation depends on circumstances. The chief vegetables in common use are parsnip, carrot, turnip, scorzonera, savoy, jettechou, cabbage, (Brussels sprouts,) onions, leeks, peas, beans, and all kinds of salading, with another vegetable, called *feve haricot*, a large species of French bean, which has a place in the field or garden of almost every farmer; and being sliced down, pod and seed, is made a chief ingredient in all farm-house cookery.

The treatment of Asparagus here, and generally in Flanders, differs considerably from our method:

in forming their beds, they are not by any means, particular as to very deep trenching, or a profusion of manure; nor as they grow up, do they cover the beds with litter for the winter, nor fork and dress them in the spring: in the furrows they form a rich and mellow compost of earth and dung with which, before winter sets in, they dress up their beds to the height of nearly eighteen inches from the level of their crowns, and without any further operation, (except supplying the furrows again for the ensuing year,) as soon as the buds appear, they cut them nine inches under the surface; by which means, having just reached the light, the whole of the stock is blanched and tender.

Every substance that constitutes, or is convertible to manure, is sought after with avidity, which accounts for the extreme cleanliness of the Flemish towns and pavements, hourly resorted to with brooms and barrows, as a source of profit. Even the chips which accumulate in the formation of wooden shoes worn by the peasantry, are made to constitute a part of the compost dung heap; and trees are frequently cultivated in barren lands, merely to remain till their deciduous leaves shall, in the course of time, have formed an artificial surface for the purpose of cultivation. The manures in general use are—

The farm-yard dung, which is a mixture of every matter that the farm-yard produces, formed into a compost, which consists of dung and litter from the stables, chaff, sweepings, straw, sludge, and rubbish, all collected in a hollow part of the yard, *so prepared as to prevent the juices from being wasted;* and the value of this by the cart-load of 1500 lbs. of Ghent, is estimated at five francs.

The dung of sheep, pigeons, or poultry, by the cart load, five francs and a half.

Sweepings of streets and roads, same quantity, three francs.

Ashes of peat and wood mixed, same quantity, eight francs.

Privy manure and urine, same quantity, seven francs.

Lime, same quantity, twenty-four francs.

Rape cake, per one hundred cakes, fifteen francs.

Gypsum, sea mud and the sediment of canals, have all been tried experimentally, and with fair results; but the two former have been merely tried; the latter is used successfully in the vicinity of Bruges.

Bone manure was altogether unknown in Flanders; but at the suggestion of Radcliff, is now under experiment in that country.

ANTHRACITE COAL.

"A bed of anthracite coal has been recently discovered in this county, on the lands of Mr. Jacob Sharff and others, about fifteen or sixteen miles from this place, by Mr. Purcell, Engineer. We have seen several specimens of the coal, and from its appearance, we should judge that it is not inferior in quality to the Pennsylvania coal. Mr. Gibbs intends to procure a quantity, and make a trial of it at his furnace. This mine will, there is not a doubt, prove to be very valuable; all that seems to be necessary, is, for the enterprising citizens of the county to open it as speedily as possible, that its good effects may be soon felt and realized."—[*Martinsburg Republican, Sept.* 18.

INTERNAL IMPROVEMENTS OF N. CAROLINA.

From the Petersburg Intelligencer.

A Convention of the friends of Internal Improvement was held at Hillsboro', N. C. on the 9th of Aug. at which Judge Ruffin presided. The counties of Cumberland, Rowan, Caswell, Wake, Warren, Person, Orange, Granville, and Guilford were represented. The object of this Convention was to consider the propriety of adopting measures for the construction of a Rail Road from the place at nor near where the Petersburg and Portsmouth Rail Road will strike the Roanoke River, to some point in the western part of North-Carolina. The general committee to whom various propositions had been referred, reported, among others, the following resolutions, which were adopted by the Convention:

Resolved, That the necessary measures should be adopted to insure the construction of a Rail Road, commencing at or near Weldon, and running thence by or near Oxford to the western section of the state.

Resolved, that the President of this convention appoint a committee of one person from each county represented in this Convention, to obtain at the next session of the Legislature, an act, incorporating the Rail Road Company hereby recommended by the name and style of the "Roanoke and Yadkin Rail Road Company."

SALSAFY, OR VEGETABLE OYSTER.

This plant, *Tragopogon porrifolium*, is biennial and the root is a good substitute for the real oyster. It is of easy cultivation in a deep rich soil. The young plants are not so liable to be destroyed by insects, as most other biennials. The roots are white and shaped like a parsnip. They may be taken up late in the autumn, and secured in moist sand from the air; or be suffered to remain out, and dug up when wanted. Every lover of oysters who lives at a distance from the sea-shore, will wish to cultivate this plant after he has once eaten them, when *properly prepared* for the table.

Mode of cooking.—Wash the roots and cut them transversely into thin pieces; boil them in a little water, or milk and water; when boiled soft, mash them and thicken the whole with flour, to some degree of stiffness, then fry them in the fat of salt pork or butter. They are a luxury.—[*New York Farmer.*

FIRE PROOF CEMENT.

The French cement for the roofs of houses, to preserve the wood and protect it from fire, is made in the following manner:

Take as much lime as is usual in making a pot full of whitewash, and let it be mixed in a pail of water. In this put two and a half pounds of brown sugar, and three pounds of fine salt; mix them well together, and the cement is compeleted. A little lampblack, yellow ochre, coloring commodity, may be introduced in changing the color of the cement, to please the fancy of those who use it. It has been used with success, and been recommended particularly as a protection against fire. Small sparks of fire that frequently lodge on the roofs of houses, are prevented by this cement from burning the shingles. So cheap and valuable a precaution against the destructive element ought

not to pass untried. Those who wish to be better satisfied of its utility can easily make the experiment, by using it on a small temporary building—or it may be tried by shingles put together for the purpose, and then exposed to the fire.—*Rail-Road Journal.*

BONE MANURE.

From the Proceedings of the Doncaster Agricultural Society of England.

The efficacy of bone on tillage, respecting which some contrariety of opinion still exists in different parts of the country, has been fully demonstrated by the judicious course pursued by the Doncaster Agricultural Association. A committee of that body was appointed in 1828, to make inquiries and report the result of them, on the use and advantages of bones, as a manure. And the method they adopted, as described in the report of the committee, recently published, may serve as a model for similar investigation. They prepared a list of queries, embracing every point on which the inquiry depended, which was submitted to the farmers throughout the whole extent of country over which the inquiry was to run, which was laid out into districts, apportioned among the different members of the committee, who undertook to distribute the queries and procure returns, and who were empowered to extend them as much farther as they pleased. The committee was composed of Lord Althorp, Mr. Duncomb, one of the members of the county, Mr. Wood, M. P. for Grimsby, and about ten other gentlemen; some of whom, as practical men, communicated their own replies to the queries, and thus was collected, what the committee characterise as "a valuable body of experimental evidence."

The report, which is extremely well drawn up, simple, perspicuous and methodical, is a condensation of the several facts, opinions and suggestions, furnished by the correspondents of the committee, from whence principles are deduced, in a very satisfactory manner. The fundamental maxim of the committee is, that "experience is the only guide, and theory and opinion useless." Nearly all the farmers are decidedly in favor of this species of manure, and although there is occasionally some apparent conflict of opinion amongst them on subordinate points, this discrepance is skilfully and in almost every case, convincingly traced to peculiarities, which do not at all affect the general principle, or impair the result at which the committee has arrived.

The degree of utility to be derived from this kind of manure, depends upon the different soils, which vary not only in character, but in other particulars, such as moisture and quality, and upon its mode of application, as the particular stage of cropping it applies to, at what period of the year, and again whether raw, or after a process of manufacture, in what quantity and what size, and whether broadcast or drilled. A long continuance of experiments, under the eye of judicious observers, can alone afford a safe ground of conclusion, as to the efficacy of boning, and as to the proper methods, and "where a course of practice so long established as the use of bones, has furnished such an amount of experiments, all doubt," says the report, "may be at once discarded."

The returns, with only two exceptions, concur in stating the manure to be highly valuable; and on light dry soils, superior to farm yard dung and all other manures. Upon very thin sand land, its value is not to be estimated. It is not only found to benefit the particular crop to which it is applied, but extends through the whole course of crops, and even in the succeeding courses, its effects are visible in the improved quality of the land, and the efficiency of a smaller quantity than would at first have insured a crop. On dry lime stone, the results are equally favorable—on light loams it is preferable to the ordinary dressing of farm yard dung—in the heavy loams and clays the experiments are unfavorable. It is laid down as a necessary qualification in a soil for bones, that it should be dry. And the committee on this principle, consider that the clay soils are too moist to receive any considerable benefit from bone tillage. Upon peat soils, previously laid dry, the advantages of bone manure are reported to be very striking; two unfavorable results corroborate the soundness of the principle just mentioned; the peat was moist. The effect of the manure on gravel is differently stated in different reports, but the same principle accounts for this conflict of opinion—a gravelly soil may embrace every variety of texture and quality, from the light dry sand, to the water-logged yellow clay, preserving in each the necessary admixture of stones and grit.

Striking testimony is furnished as to the durability of this manure: one farmer says, "on a field, part of which was boned 40 years ago, the crops were visibly better in that part for 15 or 16 succeeding years than the remaining part, although the land was all the same quality, and the part not boned was manured with farm yard dung." Another says, "about three acres of light sandy land was boned with 150 bushels per acre by mistake, and although it was as far back as 1814, the land has never forgotten it, but it is nearly half as good again, as the other part farmed precisely in the same way, with the exception of one dressing of bones." A convincing proof of the utility of this kind of tillage may be deduced from the fact, that there is a rapidly increasing demand for bones. "In no one return," observe the committee, "in answer to the query in our circular, do you continue to use them? has the answer been in the negative; the impression which is prevalent in our neighborhood that he is not accounted a good farmer, who does not use them, is echoed from the wolds of Lincolnshire."

The most valuable part of the report, consists of the practical details derived from the experiments of the farmers, who have used bones, regarding the time and manner of their application,—upon which point some variety of opinion prevails, as might be expected amongst the committee's correspondents.

Like other kinds of manure, the proper effect of bones on the soil, depends upon their undergoing a certain degree of fermentation; this principle was discovered by some experiments of Mr. Horncastle, of Hodsack, who found that boiled and stewed bones were preferable to raw. The committee observe the principles thus developed, naturally lead us to another of great importance, which has been elicited by the practice of intelligent farmers, and like all principles developed by practice, the most certain and satisfactory from its having proceeded from no theory previously formed; it is the accu-

rate observation of facts which leads to every practical improvement, and a classification of the facts proves the only and safe principle which pervades them.

The principle is the superiority of a compost of bones and manure, or other substances, over bones used singly; the effects of such a compost are stated, by some of our correspondents, who present them as their own individual conclusions, and a course into which they have been individually led by experience, without having had, as far as appears, any communication with each other. Such a coincidence, is too regular and marked to allow us to attribute it to any accidental circumstance, and the force of the concurrent testimony is so great as to leave no reasonable place for doubt.

The results of the inquiries proposed by the committee are shown in the following summary of their deductions from the details collected.

It appears that on dry lands, limestone, chalk, light loams, and peat, bones are a very highly valuable manure: they may be laid on grass with good effect, and on arable lands they may be laid on fallow for turnips, or used for any of the subsequent crops.

That the best method of using them when broad cast, is previously to make them up with earth, dung, or other manure, and let them lie to ferment.

That if used alone, they may be drilled with the seed or thrown broadcast.

That bones which have undergone the process of fermentation are decidedly superior to those which have not done so. That the quantity should be about 25 bushels of dust, or 40 bushels of large, increasing the quantity if the land be impoverished, that upon clays and heavy loams it does not yet appear that bones will answer.

MARSH MUD, &c.

From the American Farmer.

Talbot County, Eastern Shore, Md.
October 12, 1831.

MR. SMITH:—I do not know how I can more satisfactorily answer the polite call of "Potomac," than by giving some account of improvements made on one of the farms alluded to in my last by the application of bank shells, sea-ware, marsh-mud, and heads of creeks, aided by a well conducted farm-yard. These have been so remarkable as to have had a beneficial effect in this county, and I think such examples should be made known as widely as possible for general benefit.

I select this farm, *Emerson's Point*, in particular, because no one can pretend that *capital* had any agency in restoring its fertility. It lies near the mouth of Mile's river, emptying into the Eastern branch of the Chesapeake bay, and contains two hundred and seventy-five acres. It was purchased by the father of the present proprietor, Mr. Wm. Hambleton, about the year 1790, at 40s. Md. currency—5.33 dollars per acre,—and was occupied by a tenant, as it had been for two or three generations, until the year 1808, when the proprietor married and settled on it. The soil is a stiff yellow clay—growth chiefly pine; it was worn down to the lowest state of sterility: a considerable portion had been suffered to run into pine thickets, where the corn ridges are still visible; and it was nearly destitute of the buildings indispensable to a farmer. But the means of improvement were at hand: the proprietor knew their value, and lost no time in availing himself of them. He had *no capital* of any kind: but he was young, skilful and industrious. Having no slaves he commenced with two hired hands, and, occasionally, two boys, two horses and a yoke of oxen. The arable land was one hundred and twenty-nine acres, but his operations, for many years, were confined to ninety-nine acres—a poor field of thirty acres, distant from his resources, he left idle, unenclosed. He laid off these ninety-nine acres as follows:—Two fields of 45 each, two lots, 5 and 1½, orchard and garden 2½ acres. For his first crop, to make a *push*, he selected his best land, including the old tobacco ground near the house. From forty-five bushels of wheat seeded Sept. 1807, he got a crop of one hundred and fifteen, less than three for one. In the spring of 1808, he planted corn on one-half of his other field, after getting out a considerable quantity of bank shells and sea-ware, and left the other half, *under the same enclosure*, for fallow, to be manured as opportunity might permit during the summer—and this plan he continued to follow about eight years, and would have continued it longer but for the inconvenience arising from the want of *pasture*. It is to be regretted that he did not keep an exact record of all his crops: however, he assures me that the following may be depended on as very near the truth. His first crop of corn was eighty-five barrels, his second thirty-five, of which twenty were short corn. (It may be well to mention that a barrel of corn is five bushels of *grain*, or ten bushels of *ears*.) His second crop of wheat was two hundred and fifty bushels from 45 of seed, being five and a half for one. His third crop of 350, nearly eight for one. Fourth, 500, fifth, 700—and so on, increasing every year, until, in the year 1816, having altered the arrangement of his fields from two of forty-five to three of thirty acres each, he reaped from sixty-seven and a half of seed, a thousand bushels of prime wheat—one-half on corn land—the other fallow. This crop he had the good fortune to sell at $2 91 per bushel, and the good sense, although not pressed, to apply the proceeds to the payment of debts necessarily contracted in the erection of buildings, among others an excellent barn, and the purchase of three or four boys; and various expenses incident to a new establishment and growing family. It should be remarked also, that, until the end of the year 1818, his land was burdened with a third of the estimated rent, as dower.

No memorandum can be found of his crops for the three succeeding years, nor does he recollect the amount; but they were not so great as that just stated. He failed in one crop from defective seed which he purchased.

In 1820, he reaped eleven hundred and twenty-seven bushels from ninety of seed, thirty of which was sown on the out-field before mentioned. This, and several other crops to be noticed, he has on record. In 1823, his wheat crop from seventy-two was one thousand and thirty-nine bushels—nearly fourteen and a half for one.

In 1830, from 88 of seed, he reaped fourteen hundred and ninety-seven bushels of wheat, 17 for one; one-half from corn-land, the other fallow—thirty acres each—the fallow yielded twenty-five for one; see some account of this crop in the Farmer, about July, 1830.

Last year, being much occupied in repairing and

building, he seeded only fifty bushels of wheat, which produced a crop of six hundred and twenty-eight bushels. All this was on corn land, except a lot of five acres, which, from seven and a half of seed, gave one hundred and fifty-seven bushels, nearly *twenty-one for one.* I have confined myself principally to an account of his wheat crops, because he could not inform me with so much accuracy the amount of his corn crops—they were generally good, seldom falling below three barrels to the thousand and frequently reaching four. His greatest crop of corn was in 1827, from two of his thirty acre fields, five hundred and twenty barrels.

Last year he bought five thousand bushels of oyster shells, at the cost of one hundred dollars,—burnt and spread them as far as they went, at the rate of 200 bushels per acre just before planting corn, on the out-field, which got also a dressing of farm-yard manure. The crop of corn, just gathered, is fair—few in the country better.

His shell-banks giving out and the drifts of sea-ware being less abundant than formerly; about eight years ago he commenced the use of marsh, and heads of creeks, of which he thinks favorably, paying strict attention, as usual, to the farm-yard and compost heaps. He has one now, containing upwards of a thousand *skates*, or double-heads, taken a few weeks ago in his seine,—from this he calculates on a thousand cart-loads of manure for his corn-land next spring. From their livers he extracted seventy-three gallons of oil. From experiments made last year with similar oil, he is of opinion that it is a remedy against the worm, so destructive to the peach tree. He does not spread sea-ware so thick as I recommended in my last, on account of the difficulty of ploughing in—nor would he recommend the shells to be put so near—intervals of five lands should be left:—between marsh, &c. three. I readily yield to his superior judgment.

For fourteen or fifteen years past he has made great use of the sickle—much of his wheat being too rank for the cradle. He ploughs about four inches deep, and cannot be induced to go deeper—in good land sows a bushel and a half to the acre, in poor one bushel; breaks his fallow ground about the middle of June—cross ploughs soon after harvest—rolls and harrows—and if likely to be grassy, gives it a third ploughing—puts in with the plough, very shoal, in narrow ridges, keeping his manure near the surface. I consulted him respecting the question of Potomac: he is of opinion that no danger is to be apprehended from the application of rotten marsh to growing crops if put on in reasonable quantities.

It will be observed that this farm, notwithstanding its rapid improvement, has been *severely cropped,*—present gain, from necessity, being the main object. The proprietor was not insensible of the value of clover as an improving crop; but he could not let it remain long enough to be of much use to the land. He never cut but one field crop of it, 1825, upwards of fifty tons from 30 acres. Hereafter, having got his out-field in pretty good order, he will adopt the four-field system, cutting one field of clover every year. His regular force is five able hands, with some small boys,—he runs three ox and two horse-carts—has never kept an overseer, and for many years labored daily. I have not thought it necessary to state his root-crops—the produce of his hog-pen, &c. supposing that his principal crops would clearly show the progress of improvement.

There are three other farms within a few miles of Emerson's Point, on which wonderful improvements have lately been made. I mean those of Colonel John Tilghman, Mr. Edward N. Hambleton, and of Dr. John Barnett. I hope they will favor the public, through the columns of your useful paper, with an account of their management, crops, &c. There are other farms in the same neighborhood which deserve honorable notice and minute description; in particular, those of Mr. Rigby Hopkins, Major Wm. Caulk, Mr. Joseph Harrison, and Mr. Stephen Harrison, improved, principally by the use of *shell-lime.*

CORNPLANTER.

NEW DISCOVERIES.

From the American Farmer.

Loretto, Va. Sept. 16, 1833.

MR. SMITH:—I will not undertake to affirm that the present age is more vain than any which has preceded it; but if the more frequent occurrence in our public journals of communications with the caption which I have chosen for this, be any proof of vanity, then do the people of our day as far surpass their predecessors in this comfortable quality as can well be conceived, even by the most grumbling of the whole croaker race. Does any one demand the proof, let him only compare a few newspapers of the present time with an equal number of those published sixty or seventy years ago, and he will certainly find my assertion true; for where he perceives the phrase—"new discoveries" once in the latter, he will find it many times repeated in the former. It is certainly true that we should expect more now than in times long past, even if our knowledge had increased only half as fast as we believe it to have done. But admitting this to be true, and I am not disposed to deny it, our credulity should surely have diminished; for credulity is the constant companion of ignorance. Yet, how stands the fact? why that the mere proclamation of "a new discovery" gains implicit credence for the claimant among thousands who carry their eagerness to believe in such professed novelties so far, as often to take mere opinions for facts; to say nothing of their constantly adopting old facts for new ones.

I have been led to these remarks from the perusal of two articles in your paper of the 30th of August, purporting to communicate new discoveries; and they have brought to my recollection another article of the same character which was published in the American Farmer some time ago, and which I should have noticed at the time; but some circumstance not now remembered prevented me. Be assured, my good sir, that I do not make this declaration from any captious or arrogant feelings, or from a wish to dictate to others, but from a settled conviction that every subscriber to the American Farmer, (and I have been one from its commencement,) is interested in aiding you to make it the vehicle of correct information on every subject which you may think proper to notice.

The articles first mentioned are the two first in your paper of the 30th of August. That in relation to the catalpa has these words: "As an ornamental tree it has long been well known, but un-

til last year we believe it had scarcely been thought of for any thing else, except in a remote part of "the far west!" and we are indebted to General Wm. H. Harrison, of Ohio, for bringing it into notice." That General Harrison may have been the first to announce the fact in print, I will not deny, for I cannot disprove it; but you are mistaken in supposing that it was not long ago known in the east, as well as the "far west." It is at least ten years ago, I think, since Captain T. T. Tabb, of Gloucester county, in Virginia, told me that his father Col. Philip Tabb, who by the way was one of the best farmers in Virginia, had long used the catalpa for gate-posts, and that he considered it certainly as lasting for that purpose as any timber he had ever tried. That many others must have known that same fact, I cannot doubt; for Colonel Tabb was not a man to withhold from his agricultural brethren any useful discovery, supposing this proof of the lasting nature of the catalpa wood to be one made by himself. He travelled frequently over the best cultivated parts of his own state; was a very observant man, especially in regard to every thing connected with the husbandry of the country; and most probably had heard the fact from others older than himself. General Harrison himself was a Virginian, and I know did not take up his residence in the "far west," until some time after he became a man. So much for the durability of the catalpa wood being a recent discovery.

The second article to which I wish to call the attention of your readers, purports to be a discovery of certain doctors, that "new wheat is unhealthy;" and that the eating of bread made out of it has produced the cholera and all other malignant epidemics. Now, if this were true, Mr. Editor, we should have had the cholera and all other malignant epidemics, with dyspepsia in their van, after every harvest, from the time that wheat was first introduced into this country, up to the present day; for so long has bread made from new wheat been preferred to bread made from old wheat; and so long too has it been constantly consumed, without any of the dreadful consequences ascribed to it being even suspected, until since the new fashioned diseases "dyspepsia" and "cholera asphyxia" made their appearance. The reasoning used to establish the opinion, (for it is nothing more,) of the writer in the "Portsmouth Journal," is of a piece with the opinion itself. Thus it runs:—"half grown potatoes, cloy the stomach"—ergo, whole grown wheat, made into bread soon after harvest, will produce, first dyspepsia, next cholera, and other malignant epidemics. Again—"new corn, new fodder, and new hay, (all *unbaked* of course, will not only fail to nourish *horses*, but *it is said*, (quere, by whom,) will actually so disorder as to sicken them:" ergo, new wheat *baked* will give *men* dyspepsia, cholera, and heaven knows what, besides. Again—the cholera and similar malignant diseases made their appearance* in various countries about or very soon after the wheat harvest in each: ergo, bread made of new wheat was the cause of them. This discovery will match that of the oldman mentioned by Miss Edgeworth, who affirmed that the steeple of Tenterden, in the county of Kent, was the cause of the Godwin sands on the coast of that county, because they began to appear immediately that the said steeple was built.

The third discovery which I thought of noticing some time ago, was that attributed to Mr. Forsyth, of Georgia, which has caused a long known variety of cotton to be called "Mr. Forsyth's nankeen cotton." A friend of mine told me, while our newspapers were ringing the changes throughout the country, about this cotton, and the patriotism of the gentleman who had introduced it lately, into Georgia, that he had seen samples of it more than forty years ago, in a cotton factory at Glasgow, in Scotland; but that it was not approved: and I myself know, that during our revolutionary war, it was partially cultivated in every part of the tidewater portion of Virginia. So much indeed was this the case for some three or four years, that, during the summer season, if you went to any public meeting in the country, you would see almost every man's breeches, (for pantaloons were not worn in those days,) made of nankeen cotton. Sometimes their coats also were of this material. Yet it was always so mottled, that it was next to impossible to make the cloth of a uniform color; to remedy which it became the practice—especially among the country beaux, to dip their inexpressibles and coats into a solution of Arnotto, which made them appear at a distance somewhat like a flock of flamingoes.

I remain, Mr. Editor,
Your constant reader and friend,
QUID NUNC.

P. S. If the editor of the Portsmouth Journal will inform me what his doctors mean by "the meorganization powers of the stomach, and "collatitious viscera," I will let him into a bit of a seacret, as I should judge it is to him, about the effect of new corn and new fodder upon horses. "Meorganization" is not to be found in any one of four or five dictionaries that I have consulted, and "collatitious," they inform me, means—"contributed by many," which seems to me, (ignoramus as I am,) a truly strange thing to affirm of a man's bowels, although it might very well be applied to the innumerable disorders created in them by the doctors themselves. My secret about new corn and fodder is, that we southerners verily believe, that nothing in our whole country will fatten a horse sooner than to turn him into a good corn field, where he can get either new corn or new fodder to his heart's content, at any time he may fancy them. The only precaution necessary—is, to turn him in upon a full stomach. It is true that the mode is less economical than several others; but where despatch is more consulted, than economy, it is often adopted.

* In England the cholera appeared about Christmas, and in North America—certainly before harvest.

For the Farmers' Register.

COTTON FACTORIES IN PETERSBURG.

The disposition to engage in manufacturing operations was strongly evinced in Petersburg a few days since. A suitable site for extensive operations was obtained, and a subscription opened for $120,000—to be invested in the erection of Cotton Mills. The whole sum was subscribed in the course of two hours, and more might have been obtained. Another establishment is contemplated in the same vicinity, and one other in Richmond.

M.

September 26, 1833.

To the Editor of the Farmers' Register.

Buckingham Court-house, Va., Sept. 22, 1833.

DEAR SIR—I enclose for insertion in the Farmers' Register, an account of a "singular species of corn," raised near Frankfort, Ky.

If [you or] any of your subscribers have known similar "freaks of nature," will they be good enough to communicate the facts, and oblige, at least CORNSTALK.

EXTRAORDINARY NATURAL PRODUCTION.

Frankfort, Ky., Sept. 3.

We have now in our office, (where our citizens and farmers are requested to call and see it,) a most singular species of corn. The history of this rare freak of nature is substantially as follows: About three years ago, a Mr. Carrico, living in Gallatin county, Kentucky, planted some of the common Indian corn, in the neighborhood of a swampy piece of land, which was grown over with a thick strong grass, resembling *sedge* grass. In the fall of the year, when he was gathering his corn, he was surprised to find that ears of corn were growing and ripening upon the *grass*, and that on the blades of the grass separate grains were growing. Struck by the singularity of the circumstance, he carefully preserved the grains and planted them in the next spring. The result was extraordinary, producing a growth partaking of the qualities both of the grass and corn, and superior to both as forming a third article very advantageous to stock farmers. The stalks in our office present most remarkable appearances.

The *tassel* does not bear any resemblance to the *corn tassel*, but is more like the heads of coarse grass—the blades are long and very slender, resembling more the blades of oats than of corn. Upon the extremities of these blades separate grains of corn, enclosed in a husk, presenting the appearance of hazelnut burs, are found, and to the bodies of the stalks more perfect ears are attached. The stalks themselves are long and slender, and not unlike the wild rye of the country, only stronger and more substantial. We believe that this grain is at least one thing new under the sun, and unlike most novelties, it promises to be useful.

VEGETABLE PHYSIOLOGY IN RELATION TO ROTATION OF CROPS. *By M. Macaire.*

In a memoir inserted in the transactions of the Société de Physique et d'Histoire Naturelle of Geneva, M. Macaire has stated some physiological facts, worthy of being generally known.

A judicious rotation of crops is known to be a matter of great importance. One kind of vegetable (A) will grow and flourish well in a soil from which another kind of vegetable (B) has just been gathered; while an attempt to raise another crop of the first vegetable, (A) or a crop of the third vegetable, (C) immediately after the first (A) in the same soil, will be attended with little or no success. The discovery of this fact, which is almost as ancient as agriculture itself, is supposed to have led to the practice of fallowing. A piece of fallow ground will, almost to a certainty, be covered with a crop of weeds. These being plants of different nature, do not unfit the soil, but prepare it for a succession of the same crop as that which preceded them. But science and experience has taught the enlightened farmer to substitute useful plants in the room of weeds, and thus to keep his ground in profitable activity.

Various reasonings have been employed to account for the necessity of this rotation. 1st, That different plants absorb different juices from the same soil, and that a piece of ground exhausted by culture may still be rich for another kind of vegetables.—But it is known to physiologists, that plants absorb all the soluble substances that the soil contains, whether injurious to their growth or not.—2d. That the roots of different plants being of different lengths, extend into different layers of the soil, and thus derive from it appropriate nourishment. But the roots of all plants, at the period of germination, must be in the same stratum, and, of course, be equally dependent upon it; and besides, the culture of the farmer turns up and mixes the various layers of the soil together, so as to render them, in all probability, homogeneous. It is known also, that plants of the same soil, such as clover (trefoil) and lucerne, do not prosper in succession, although their roots are of very different lengths. The true explanation of the necessity of rotation appears to be founded on the fact stated by Brugmans, and more fully exposed by De Candolle, that a portion of the juices which are absorbed by the roots of plants, are, after the salutiferious portions have been extracted by the vessels of the plant, again thrown out by exudation from the roots, and deposited in the soil. It is probable the existence of this exuded matter, which may be regarded in some measure, as the excrement of the preceding crop of vegetables, that proves injurious to a succeeding vegetation. It has been compared to an attempt made to feed animals upon their own excrements. The particles which have been deleterious to one tribe of plants, cannot but prove injurious to plants of the same kind, and probably to those of some other species, while they may furnish nutriment to another order of vegetables.

The author endeavored to subject these theoretic views to the test of experiment. After various attempts to raise plants in pure siliceous sand, pounded glass, washed sponge and white linen, he decided upon pure rain water. After cleansing and washing the roots thoroughly, he placed them in vials with a certain quantity of pure water.—After they had put forth leaves, expanded their flowers, and flourished for some time, he ascertained, by the evaporation of the water, and the use of chemical re agents, that the water contained matter which had exuded from the roots. He satisfied himself that this is the fact with respect to nearly all the phanerogamous plants.

Several plants of the *Chondilla murallis*, perfectly clean, were placed with roots in pure water. At the end of a week, the water was yellowish, and emitted an odor like opium, and had a bitter taste. Subacetate and acetate of lead produced a brownish flocculent precipitate, and a solution of gelatine disturbed its transparency. As a proof that this matter was the result of excretion from the roots, it was found that neither pieces of the stem, when macerated in the water during the same time, occasioned either taste, smell, or precipitate.

To determine at what period, whether during night or day, this discharge from the roots takes place, a plant of common bean (*Phaseolus vulga-*

ris) was carefully cleaned, placed in rain water, and kept a week, during the day time in one vessel, and during the night in another, being well wiped at each transfer. In both the fluids there were evident marks of excretion from the roots, but that in which the roots were immersed during the night contained a very notable excess of the transpired matter. Numerous other experiments gave the same result. As it is well known that the light of day causes the roots to absorb their juices, it is natural to suppose that during the night absorption ceases and excretion takes place.

The author gives a few interesting details of experiments on some particular families of plants.

Gramineous plants. Wheat, rye, and barley, were examined. They do not grow well in rain water, probably from the notable quantity of mineral substances, especially silex, which they contain, and which they cannot derive from pure water. The water in which they have vegetated is clear, transparent, without color, smell, or taste. It contains some salts alkaline, and earthy muriates and carbonates, and only a very small portion of gummy matter. He thinks these plants reject scarcely any thing but the saline matters foreign to vegetation.

The inferences which the author deduces from his experiments (acknowledging, however, that more extended trials on a greater number of families and individuals are desirable,) are, first, that the greater part of vegetables exude by their roots substances unfit for their vegetation. 2d. That the nature of these substances varies according to the families of plants which produce them. 3d. That some being acrid and resinous, may be injurious, and others being mild and gummy, may assist in the nourishment of other plants. 4th. That these facts tend to confirm the theory of rotation due to M. De Candolle.

THE IMPORTANCE OF GOOD SEED WHEAT.

From the New-England Farmer.

It is an opinion prevalent in many parts of the country, that blighted wheat is equally good for seed as the fair and perfect grain. Indeed, I have been informed that some famers have actually changed their sound and full seed for that which was blighted, as the latter was cheaper, and from the greater number of grains to the bushel would go farther. This practice has been sanctioned and encouraged by as high an authority as that of Sir Joseph Banks; but both reason and experiment loudly condemn the practice. Who expects to get as good a product from small and half ripened potatoes as from those which are fair and fully grown? and so in respect to other seeds? Who would take his most diminutive, half grown, stunted, and deformed animals, for the purpose of raising from them an improved stock; and who does not know that by such a choice the race must inevitably become deteriorated? Why does not the analogy apply equally to wheat? The matter, however, has been put beyond a question by a most valuable experiment on record.

"The late Benjamin Bell, Esq. in October 1783, sowed a field of twelve acres at Hunetrillin, Roxburgshire, with 54 bushels of wheat, of which 12 bushels were the best that could be procured in the London market of crop 1783, 30 bushels were from East Lothian of crop 1783, 6 bushels the best wheat in the London Market of crop 1782, and 6 bushels produced near Edinburgh in the year 1782. It must be remembered that 1782 was a season generally unfavorable to raising wheat in perfection; but that in 1783 the grain was sound and of good quality. The field on which these parcels of wheat were sown had been well fallowed, was equally manured with dung, and the whole of these seeds were sown in the beginning of October, all of them having been washed in strong brine and afterwards dried with powdered quicklime. The English seed of crop 1783 was sown on one side of the field; three bushels of the Mid-Lothian seed of crop 1782 were sown in the next three ridges; to this succeeded the English seed crop of 1782; then the East Lothian wheat of crop 1783; and lastly, the remaining three bushels of Mid-Lothian seed crop 1782.

"The field being all in good condition, the wheat appeared early above ground; and the shoots were every where strong except on those ridges which were sown with the Mid-Lothian seed crop of 1782, on which the plants were weak and not very numerous; neither did they spread or *tiller* like the others; so that during the winter and spring months, the wheat on these ridges had a weak appearance; on harvesting, the straw was thin and short; and the ears were short and small the grain likewise being not so large nor heavy as on the other parts of the field. On being thrashed and measured, the produce of the 12 bushels of seed, crop 1782, both the London and Mid-Lothian taken together, was only 66 bushels or 5½ after one. The produce of the rest of the field was fully 15 bushels for every bushel of seed. The difference in value was also considerable, as the produce of the seed from 1782 sold almost a shilling the bushel lower than the other. On the whole it seems the safest plan, to use none but good seed, and to avoid as much as possible the seed of wheat that has been infected with any disorder."*

H. C.

Meadowbanks, Deerfield, 26th Aug. 1833.

NUMBER OF PLANTS TO AN ACRE.

From the American Ploughboy.

The following is a very useful table. It is, however, much more convenient for farmers to be familiar with the rule or principle of calculation than to be at the inconvenience of referring to the table. The 160 square rods to an acre give 4840 yards, because the 5½ yards in length, to a rod, multiplied by itself, makes 30¼, the number of square yards in a rod; this last number, multiplied by 160, gives 4840. There are three feet in a yard; this number squared produces 9, with which you multiply 4840, and obtain 43,560, the number of square feet in an acre. All that the farmer need remember is the number of feet in an acre, which he will divide by the square of the distance of his plants. For example, if he plants 4 feet apart, 4 multiplied by 4, gives 16, the number of square feet allotted to each plant or hill. Divide 43,560 by 16, the quotient is 2,722, the number of plants or hills to the acre.

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* Sinclair's General Report, Vol. 1, p. 479.

The number of plants which may be planted on an acre=160 rods or poles=4840 yards=43,560 feet, is as follows:

Feet apart.	Square feet.	No. of plants.	Feet apart.	Square feet.	No. of plants
1	1	43.560	11	121	360
1½	2¼	19.360	12	144	303
2	4	10.890	13	169	257
2½	6¼	6,969	14	196	222
3	9	4.840	15	225	193
3½	12¼	3.556	16	256	170
4	16	2.722	17	289	150
4½	20¼	2,151	18	324	134
5	25	1.742	19	361	120
6	36	1,210	20	400	108
7	49	889	25	635	69
8	64	680	30	900	48
9	81	537	35	1225	35
10	100	435	40	1600	27

MILK SICKNESS.

The Danbury (Pennsylvania) "Herald of Freedom" contains a letter dated Vincennes, (Indiana) July 11. The following is an extract:

"At Logansport, on the banks of the Wabash, I was cautioned by an elderly lady against using either milk, butter or beef, on my way to Vincennes. As a reason for her caution, she informed me that the milk sickness was common in this state. I had heard of it before, but knew little of it. She informed me that very many deaths occurred annually by this dreadful malady. There is a difference of opinion as to the cause that produces it; but the general opinion is that it is occasioned by the yellow oxide of arsenic in the low-ground and woodland, and particularly near the Wabash river, and that some weed, (as yet unknown,) imbibes the poison, and when eaten by cattle causes them to quiver, stagger, and die within a few hours. If the cows eat of it, the milk is poisoned, or butter that is made of the milk, and is also as sure death to those who use the milk or butter, as it is to the animal that eats the weed. Great care is taken to bury such cattle as die with it: for if dogs, &c. eat their flesh, they share the same fate, and it operates upon them as violently and fatally as upon the creature that was first affected with it. The butcher uniformly in this state runs the victim for his knife a mile, to heat its blood, and if it has eaten of the weed, it will at once, on stopping, quiver and shake; if it does not, it is considered safe to butcher; and this is the uniform test, even when beef cattle show no signs of having eaten the weed. Indiana is not alone in this misfortune—there have been many cases in some parts of Ohio and south of St. Louis, and others of the southwestern states. I have seen many farms, with comfortable buildings and improvements, entirely abandoned, and their owners fled to other quarters, to avoid the dreadful curse. And yet, I confess I have never seen any section of country superior in soil to the land adjoining the Wabash,—and this is the only objection to it."

BYFIELD HOGS.

From the Observer and Reporter.

Since the establishment of Agricultural Societies in our country, great attention has been paid, and large sums expended for the improvement of stock of every description. Hence it is, we have horses and horned cattle equal to the English breeds, and sheep that produce all grades of wool; the Merino and Saxon, not inferior to the Spanish and Saxony wools.

Our hogs have also been greatly improved by a cross of the Chinese and Calcutta breeds. Other descriptions of hogs lately brought to the western country, promise a still greater improvement in the stock of this most valuable animal. They are the Byfield, the Swiss, and the Russian. Of the three, the Russian is less preferable, being small and too fat generally to be prolific or profitable; but when crossed with other stock, a desirable breed is produced, but not equal to the Byfield or Swiss; of these two, time has not yet developed which is best. Mr. Robb, of Indiana, gives the preference to the Swiss, while Mr. Bird Smith, of Woodford county, who is raising the above named stock, gives the preference to a cross produced through the Byfield and Swiss.

The Swiss hog is a dark brown, lengthy and round bodied, big bone, hair thin and coarse, very prolific and easily kept; weighing from two to three hundred pounds at a year old; at two years old he will weigh from four to five hundred pounds. The Byfield is a beautiful white hog; his ears are small, pointing to the nose; broad back, deep chest, large jowls, short nose, dish face, and thin hair. He was brought from Massachusetts (bred by G. Parsons, Esq.) to the state of Ohio,, where his blood is seen mixed through the great variety of breeds of that state, generally producing a stock after his own kind, as well in color as in beauty and size. He is three times as profitable as the common hog, because he will come to maturity in half the time, and will not consume half the food. He is fat from a pig until he is ready for the pickling tub, weighing from 200 to 250 at a year old. Grass being his natural food (as it would seem) he is not so subject to the sore throat, a disease produced by too much grazing, particularly on clover. He is said to undergo the fatigue of driving as well if not better than the common hog. This at first view would appear unreasonable from his bulky appearance: but when we consider that he is never poor, and habituated from a pig to carry his fat, increasing in strength as he increases in weight, he would not be so liable to lag as a hog quickly fattened would be. But this quality is of less importance, as the completion of the rail-road will give a different direction to our work.

We understand that Mr. Smith intends to exhibit a few of his hogs at the stock fair next Monday.

AGRICOLA.

TO CORRESPONDENTS AND SUBSCRIBERS.

The communications which have been received for the Farmers' Register, and do not appear in this number, have been omitted because they were too late to be inserted in their proper place. All these will be in No. 6. Our correspondents will oblige us, and will generally avoid similar delay, in the publication of their communications, by transmitting them as early as convenient in each month.

The frequent misdirection of letters, causes both inconvenience and expense,and makes it necessary to ask

the attention of our correspondents and patrons to the address of the Editor, as printed on every copy of the Register.

All the earlier numbers can still be furnished to new subscribers. When they are exhausted, notice will be given.

MISSING COPIES OF THE FARMERS' REGISTER.

The editor has been no less surprised than mortified to hear already many complaints of subscribers having failed to receive their copies of the Farmers' Register, by mail. Some such failures must be inevitable in the commencement of any new establishment of this kind, and therefore we will not say that our own office arrangements have been always and absolutely free from error. But we can say, that every precaution has been and will be used, to prevent losses and disappointment to our subscribers. Neither do we charge these failures in the mass, as is usually done, to the post-offices, because we *know* of many particular causes of miscarriage, which we hope that this notice will prevent from occurring hereafter. Many names of subscribers, or of their places of residence have been sent to us, written so carelessly, as to be illegible ; and sometimes the name of the post-office, or country, has been either omitted, or inserted incorrectly on the lists sent in by our friends. The most rapid and even handsome handwriting, is often far from being plain to the reader—which it is important that our *correspondents* as well as our subscribers should remember. The loss of every copy as yet reported, has been immediately and willingly supplied: Not only many *duplicate*, but even some *triplicate* copies have been sent, when the previous losses were certainly not caused by our fault. Nor will we refuse to make up, in like manner for future losses, if it can be done from the few surplus copies of each number that may remain. But more than this cannot be expected. We have not engaged to do more than all the publishers are bound for, to place in the post-office the copies for all subscribers, well and securely wrapped, and properly directed. After that is done, subscribers must incur the risks of the transportation of their copies by mail, and delivery, just as the editor willingly assumes the risk of the loss of their subscription money, which may be directed to him, after its being committed to the mail. The same number of copies are struck off monthly, to supply the present, or retained for future subscribers—and the taking a single copy from these, would destroy the value of the whole volume, and may cause the loss of a year's subscription.

No more extra, or duplicate copies can be furnished, of either of the first three numbers.

DIRECTIONS OF LETTERS.

All communications for the Farmers' Register, or letters on business connected with its publication, must be addressed to "Edmund Ruffin, P. M., Garysville, Va."

The Editor assumes the risk of the loss of all payments sent to him, from subscribers, by mail.

☞ The indisposition of several of the publisher's hands has prevented the appearance of the Register before this day (Friday, 11th Oct.) The *sixth number* will be published on the 9th of November.

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ERRATA IN ARTICLE ON NORTH CAROLINA—FARMERS' REGISTER, NO. IV.

3d line from the bottom, in p. 204, for *preference*, read *prescience*.
7th line from top, in page 205, for *master* read *monster*.
28th line from top, in page 206, for *transportations*, read *transactions*.

RICHMOND WHOLESALE PRICES CURRENT

Tobacco—lugs	4 50 a 5 50	Sugar, brown	10 a 12
Other refused	6 00 a 7 00	Hides, Spanish	11 a 16
Cm. & md. past	7 50 a 8 50	Brandy Cog gall.	1 20 a 1 50
Good	9 50 a 10 00	Do. Apple	33 a 35
Fine shipping	10 00 a 11 00	Whisky	32 a 35
Flour, City mills	6 50 a 6 75	Rum, West India	70 a 1 00
Canal	5 62	Do. New England	36 a 40
Wheat, new white	1 15	Wine, Madeira	2 50 a 3 00
red	1 15	S. Madeira	80 a 1 10
Corn	70	Malaga	40 a 60
Corn meal	80 a 85	Tea, imp. and gunp.	80 a 1 00
Oats	40	Do. young hyson	70 a 80
Beef	4 a 5	Molasses	32 a 40
Bacon per lb.	9 a 10	Salt, per sack	1 90 a 2 12
Butter	14 a 16	Hemp	1 00 a 1 30
Coffee	13 a 14	Bar iron	3 3-4 a 4 1-2
Cotton	15 a 17	Pork, per bbl.	12 00
Sugar, loaf and lump	13 a 17	Shad do.	6 00 a 7 00
		Cut Herrings, new	4 50 a 5 00

St. Domingo Mahogany, from 8 to 37 1-2 cents per foot.
Honduras 7 to 15 do

PRICES OF STOCKS.		COURSE OF EXCHANGE.	
U. S. Bank	109	North Carolina bank notes	½
Bank of Virginia	112	South Carolina do.	3 a 4
Farmers' Bank	111	Georgia do.	4 a 5